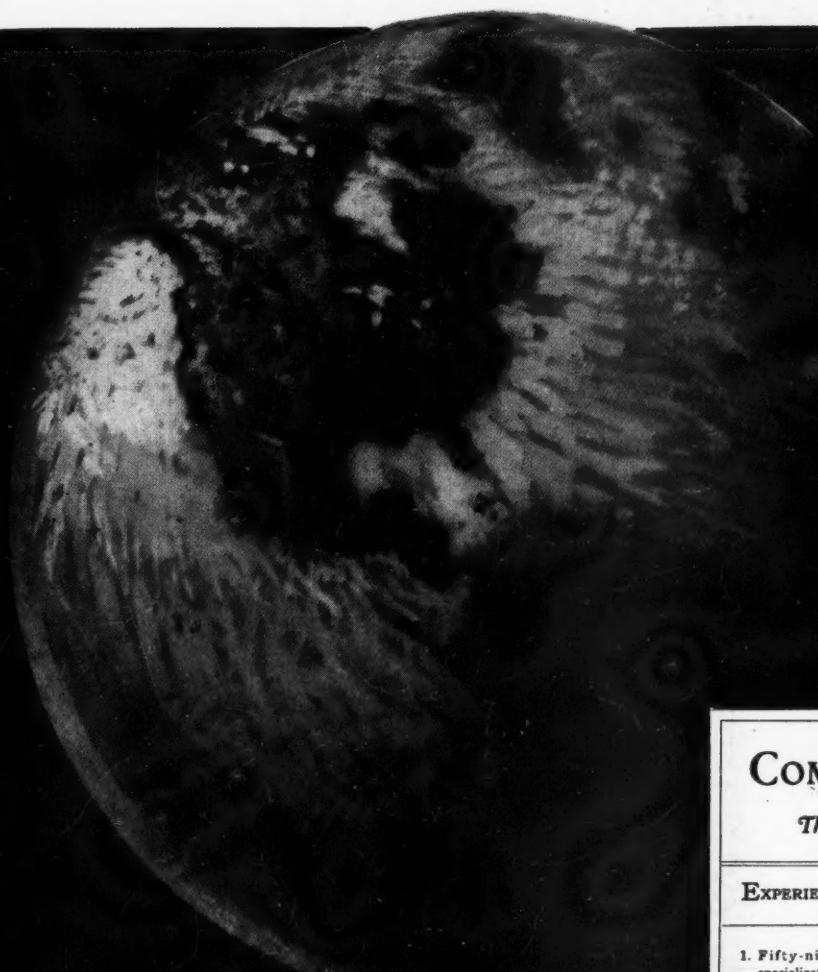


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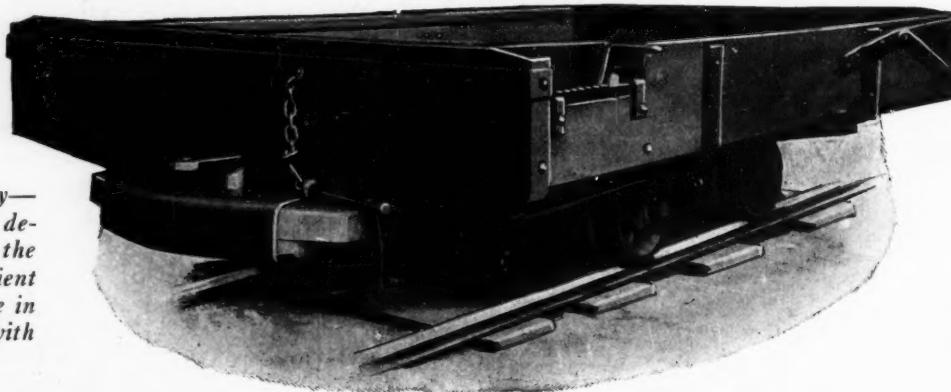
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# COAL AGE

With which is consolidated "The Colliery Engineer" and "Mines and Minerals"  
R. DAWSON HALL, Engineering Editor

Jigging Conveyor Reduces Coal-Mining Costs	287
BY FRANK H. KNEELAND.	
Surface Damage and Coal Betterment Waken Much Interest at A.I.M.E.	292
Bureau Offers "Graduate" Course in Mine Rescue	297
BY J. J. FORBES AND G. W. GROVE.	
Modified Hand Firing Cuts Mine Fuel Consumption	296
BY J. H. EDWARDS.	
Victory of Public in Coal Strike Causes Chagrin to Some Senators Who Voted for Copeland Resolution	304
BY PAUL WOOTON.	
Local Strikes Reflect Return to Normalcy in Hard-Coal Fields; See Trouble in Interpreting Pact	307
Kentucky Power and Mining Companies in Merger	304
Committee Votes Against Confirming Woodlock	305
Commonwealth Fuel Co. Sold for \$3,000,000	305
John A. Bell Properties Sold at Auction	305
Resume Work at Euclid Mine	305
D. L. Wing Dead, Was Noted As an Economist	306
Big Muddy Dredging Project To Get Further Study	306
Dust Code Wins A. E. S. C. Vote; Other Plans Afoot	306
Seven Die as Result of Kentucky Mine Blast	307
New Anthracite Prices Out	307
Delay Horning Report	307
Editorials	285
Viewpoints of Our Readers	299
Underground Operation	300
Practical Pointers	302
Weekly Review and the Market	308
Foreign Market and Exports News	313
News Items from Field and Trade	314
Traffic	316
New Equipment	317

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## The New Idea in Pumping

PUMPING IN MINES is so important a factor in coal production, especially of anthracite, that small economies have large significance. It costs money to keep pumps running 24 hours a day. Power costs, maintenance costs and attendance charges for pumping are always high, primarily because they are continuous, or nearly so. A few years ago automatic pumping apparatus effected considerable savings by cutting down attendance charges. Other improvements followed.

Today electrical control is further revolutionizing pumping. When the automatic features were developed and applied to pumps the apparatus was so nearly perfect in its operation that there wasn't much room for improvement; however some advances have been made in the co-ordination of electrical control. These will be discussed in next week's issue of *Coal Age* by R. S. Sage.

\* \* \*

ROCKY MOUNTAIN coal mining will be at the fore in next week's issue also. The engineering institute of that region is in session Feb. 23, 24 and 25 in Denver. Even though the sessions take place 1,700 miles from the publishing offices of the magazine, the air mail and the telegraph will be counted on to put a full report of the meeting before the readers of *Coal Age* while the discussion is still hot.

\* \* \*

AIR-SAND CLEANING of coal will be further treated in these pages next week. This scheme of separating rock and dirt from good coal by passing the output of a mine through sand "boiled" by air will grasp the interest of mining men everywhere.



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# COAL AGE

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Devoted to the Operating, Technical and Business  
Problems of the Coal-Mining Industry

R. DAWSON HALE,  
Engineering Editor

Volume 29

NEW YORK, FEBRUARY 25, 1926

Number 8

## Support Your Association

JUDGING by appearances, the National Coal Association is strongest when the industry is flourishing and weakest when it is suffering. It is beginning to grow again with the advent of better times. But surely when the industry is in trouble the need for active co-operation to avoid unfair practices and to improve business is greatest. In prosperous times taxes can be shouldered even if with a shrug, but in perilous years taxes that might be borne without great hardship become an increased burden. When, moreover, open consignment of coal is most rampant and harmful, activity to lessen it is nothing less than a vital necessity. Furthermore, when industry uses less and less coal, the need for a more active extension of uses of coal is of paramount importance.

Haslam and Russel in their recently published book "Fuels and Their Combustion" say that "an increase in efficiency [in the use of coal] of 1 per cent (from 10 to 11 per cent) would mean a yearly saving of approximately \$1,000,000,000." Is this a matter the industry can afford to pass over without notice? If that billion dollars is saved to the public, it is by the same sign lost to the coal industry. One would be disposed to expect that the industry would be hustling to see if that billion dollars saved could be replaced by a billion dollars expended. Instead only the National Coal Association seems to sense the danger and is making efforts to meet it. To this end there is refrigeration and the increase in the use of furnaces instead of stoves which give only local heating; there is the use of heat for removing snow from the streets and sidewalks; there is the increased use of heat for garages; there are possibilities in farming such as greater use of electric power for services now performed by hand and the introduction of dry season irrigation and sprinkling where now crops are allowed to wither and die. There are chemical uses for coal that will materially aid in swelling the production.

The National Coal Association also can foster in the public a better sentiment to coal mining and create in the industry itself a better understanding of the public and a clearer knowledge of recognized and tested public relations.

The work of the association in the collection of trade data, in standardizing them so that they will be comparable, one with another, and in fighting assigned cars, if that prove to be necessary, are all parts of a program in which all should assist. Other industries have learned that though there are competitive matters in which their associations cannot partake, there are also matters that are only competitive with rival industries, and these conditions can be greatly bettered by combined action. After all, a common feeling of general need will make for a final result favorable to all in the industry.

The individual operators tend to pull against one another, and the boat in which they are all embarked drifts helplessly. Let them organize, let their oars dip as one and all move in the same direction, and then as a result they will find that they will all arrive at the haven they are seeking. Alas, when the waves are highest and winds strongest they leave the boat uncaptained; each determines to follow his own behests, and the result is that there is no progress, nothing but clamor and bewailing. An association is necessary or the boat will founder in the depths of the rage for economy in the use of coal that still threatens the industry.

A co-operation with the wholesale and retail associations which distribute the product and can influence the consumer to use more coal for his greater profit and comfort is greatly to be desired. The men in these associations still seem to think that business is best promoted by energy in competition rather than by selling new ideas to the public, which, by the way, shows no inventiveness in applying the marvelous possibilities of coal to the many uses to which that fuel can be put. Every village and city wholesaler and retailer should be busy popularizing the possibilities of coal. Today the best minds in the advertising field are seeking ways to widen the market rather than to steal the business of a competitor. Let the coal men thrive together rather than at one another's expense.

## Pigs Is Pigs

THE famous story of Ellis Parker Butler throws some doubts as to whether pigs is necessarily pigs; and something of the same doubt comes up as to whether coal is coal, without such finer distinctions as modern taste demands.

At the Coal and Coke Committee session in connection with the recent annual meeting of the American Institute of Mining and Metallurgical Engineers R. H. Sweetser protested that to say coal was not sufficient—any more than to say iron ore was sufficient—that as iron ore was sold on its contents of iron, phosphorus and the rest, so the value of coal varied enormously according to its content of fixed carbon, ash, volatile matter and so forth. He believed that some of these things at least should be determined in marketing coal, and that the consumer should know what he was buying. How important is a low-ash content for metallurgical coke he demonstrated, and as to domestic anthracite, he remarked that the New Englanders were objecting strenuously to buying an indeterminate mixture of ash and combustible matter for their domestic fuel consumption. Considerable interest was taken in this matter, both from progressive and stand-pat sides; but a motion to request the Coal and Coke Committee to consider this subject was ruled out of order by the chairman.

There is no question, however, that the objection to buying a pig in a poke, in the shape of a ton of coal containing no one knows how much waste, is a growing one. There is no question but from time to time some coal has been unloaded into the consumer's cellar at the standard price which has refused to ignite at all, and that a widespread objection to this crudity has gradually grown up. The majority of companies who are shipping carefully prepared and good quality coal could protect themselves against these occasional buccaneers, who discredit the industry, and whom the public is given no means to differentiate, by advertising the quality of their product—of the output of their respective mines. Whether a general statement of the average quantity of ash is practicable is another problem—but it would seem to be one which should be attentively considered. Mines producing a low-ash anthracite, to take a specific example, should be able to command a premium for their product. In these days no one will submit to buying a ready-made suit of clothes without trying it on, and no merchant will decline to discuss material and fit. Indeed in the mineral world it is doubtful if anything except coal is ever marketed without analytical specifications.

#### Mark Danger Line

PROBABLY nine-tenths of all the loss of life sustained at the working face in coal mines is due to falls of roof and coal. Records show also that the first three feet of height above the top of the rail to all intents and purposes, is absolutely safe. That is, in order to be dangerous a fall must start at a point on face or rib that is more than 3 ft. above the top of the rail. Thus those working at the face of a room, heading, breakthrough, crosscut, tunnel or other mine passage need pay no attention to that portion of the face or rib which lies below this 3-ft. line but should concentrate all of their safety efforts on the upper, not the lower portion of the working place.

In order to impress the importance of watching the top and higher areas of face and ribs upon all those engaged in underground work, one large company has painted a white line along both ribs of all workings with the words "Safety Zone" stenciled in bold letters at intervals below it. These lines are carried forward with the workings and each foreman and assistant foreman is instructed to see to it that this detail is not neglected. Inasmuch as this company awards bonuses to its foremen and assistants on a merit and demerit system and he who does not have his "safety line" up to the required point is given an appropriate number of demerits it is easy to enforce this ruling.

Safety within the mines has passed the guesswork stage. In order to keep a mine safe today it is necessary to know facts and act accordingly. Marking the "Safety Zone" is merely another way of impressing upon the underground worker the importance of taking no chances whatever that human knowledge and foresight can discern as possibilities. The course taken by this company is one that may well be carefully considered and adopted by others engaged in the same or a like business. It is a perfectly logical, albeit an indirect, means of strengthening and stiffening safety morale. It is a sort of "faith cure" in that it tends to focus the workers thoughts. And in mining he who thinks safety is safe.

#### The Coal Industry as a Battle Ground

THAT active economic belligerency has recently been exhibited by the coal miners toward the owners and operators of mines, both in Great Britain and in the United States, can hardly be fortuitous; it must be the result of common underlying causes. To be sure, conditions are not similar. In Great Britain the pre-war export coal trade was the foundation of her commercial expansion—she shipped coal and imported raw materials for her factories. The economic upheavals which succeeded the war, in part due to increased living costs, in part to the demand of British coal miners for a higher standard of living and less labor, have led to far more effective competition of continental European coal, from the Rhenish and Westphalian fields; and the consequent lack of work in the English fields. Now the miners' unions demand that the government take over the mines, manufacture cheap electric power, encourage the development of industries using power, and the rest of a beautiful but visionary plan of state socialism; always, however, retaining the right to strike.

One point where the case of the American miners seems to resemble that of their less fortunate British brethren is that there appears to be an element among the miners, and elsewhere in America, that demands government operation—a government operation, to be sure, which the labor element will control; and this government operation will fix the prices at which the public is to buy coal, fix the profits of the operators, and similar economic nonsense; in fact it will fix everything but the miners' pay. To be sure, the published utterances of the leader of the miners, Mr. Lewis, are definitely against government operation; but at least the strategy of the recent coal strike would appear to have been pressing in that general direction.

This idea of government control, in Great Britain or the United States, represents an impracticability of vision, a demand of labor to rule and not to co-operate, a more than socialistic aim, a suggestion of the doctrine of the rule of the so-called proletariat which has ruined Russia. Why the organized labor of coal mines should take an extreme stand is not clear, but it is probable that it is due to the fact that the coal industry is a key industry, capable of being used to bludgeon the public and the government, and that therefore it has been selected in former years by the propagandists of the doctrines mentioned above as a strategic ground whereupon to give battle. And it has been found to be a good vantage ground, because many of the miners, formerly underpaid and recruited from the impoverished peasantry of Europe, are still not so far advanced and educated as to recognize all the fundamental flaws in the conception. The coal barons of a generation ago, then, are responsible for the militant miners' unions of today. If there be any baronial temper left among the operators—and that accusation is often heard—now is the time to forswear it for all future time.

The struggle of the exponents of mine-labor domination without regard to the rights of others has been, in the present instance, in the United States, a losing battle. That American capital and labor are far more enlightened and advanced than the leaders of mine labor realize is evident since both have abandoned their former contempt for and exploitation of the public and are striving to render service to the public in order that each may profit by the resultant prosperity.



## Jigging Conveyor Reduces Coal-Mining Costs

**Eickhoff Machine Built in Sections That Are Easily Moved—It Follows Faces Closely and Continuously—Miners Have Low Lift and Short Shoveling Distance**

By Frank H. Kneeland

Associate Editor

**I**N THE CONTINUOUS quest of lower production costs American operators in large numbers are trying conveyors. Many different types and makes of these machines have been and are being experimented with. Probably the simplest and lightest of the varieties thus far tested is the oscillating or swinging trough type. Several kinds of these machines are being tried out in the various coal fields of the country from Alabama to Wyoming on pitches ranging all the way from just below the critical angle for coal on sheet iron to 7 or 8 deg. adverse inclination—that is, up hill.

One of the simplest oscillating or jigging conveyors so far tried is known as the Eickhoff. As may be readily suspected from the name, this is an importation from Germany, built to metric dimensions, but this fact does not deter it from successfully moving American coal. It is at present in daily operation in mines located in several states, including Virginia, Pennsylvania and Wyoming. Although it is especially adapted to use in low beds, it may be employed in measures of fair thickness if desired.

This conveyor is built in sections of varying widths and lengths to suit local conditions. An installation of this machine which might in many respects be considered as typical is in daily operation in the Kentucky No. 2 mine of the Virginia Iron, Coal & Coke Co. at Toms Creek, Va.

Some of the details of this machine as here installed may be seen in the accompanying illustrations. Although it is now being used in drawing pillars, it may be employed with equal facility for driving rooms. About 600 ft. of conveyor trough can be driven from

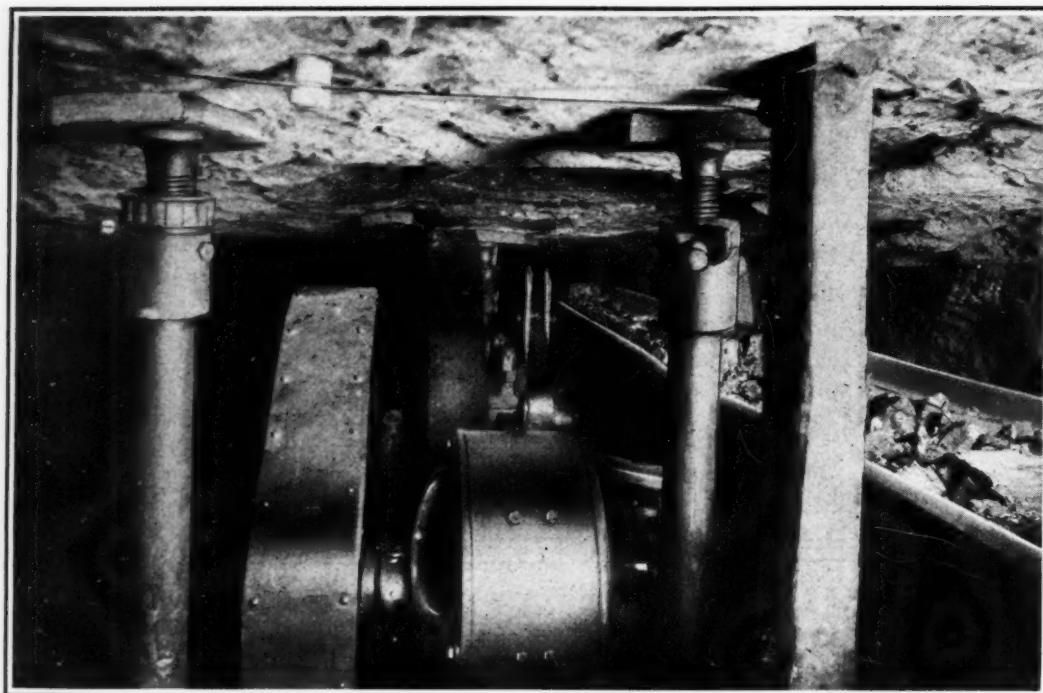
one shaker engine, but only approximately 300 ft. is in use at this mine. This length will enable rooms 260 ft. long on, say, 50-ft. centers to be driven and the room pillar to be robbed back immediately.

In this mine the coal bed is approximately 40 in. thick and the total headroom is about 4 ft. A considerable amount of waste material is separated from the coal at the face. This is thrown into the gob and largely fills it. The roof here encountered is more or less uncertain in quality and requires the use of a fair amount of timber in its support. Inasmuch as the total length of props is only about 4 ft., however, this timbering is not heavy. It consists almost entirely of simple posts with cogs employed only infrequently.

Operation of the conveyor and its application to room driving and pillar extraction are extremely simple. A loading point is first established on the heading. In order to secure sufficient headroom for the conveyor discharge the roof must here be brushed. The room proper is driven narrow, 10 to 12 ft. being sufficient. After the first few cuts have been made in this room the shaking engine may be set up, temporarily if desired, and thereafter the conveyor be employed for loading out all the coal.

Two sections of chute is about the least that can be used successfully. In starting a room, therefore, only the drive and discharge sections would at first be employed. The drive section carries a double fin or keel on its lower side which furnishes a means of attachment to the shaking engine. The discharge section differs from the standard pan in that it is supported at or near either end instead of at one end only. As the room advances section after section of chute is added until full room depth has been attained. Under the conditions here assumed this would be at a depth of 260 ft.

The headpiece accompanying this article is a view looking along the cross or transverse conveyor toward the main conveyor. As may be seen, the headroom is low and the miners for the most part shovel on their knees. It is in low mines that conveyors are particularly useful.



#### Moving Along

This shows a rear view of the shaker engine with the loaded conveyor beside it in the Kentucky No. 2 mine at Toms Creek, Va. The quantity of coal that this conveyor is called upon to transport is not equal to the full capacity of the machine, so the connecting rod joining the crank to the triangular rocker is shown in this picture pinned into the second or intermediate set of holes.

After the room has attained its full depth a passage or breakthrough is turned from its end and driven through the pillar either right or left as may be desired. The cross or feeder chute serving this breakthrough is driven from the main conveyor in the manner shown in Fig. 1. When this breakthrough has been completed the pillar is brought back by successive cuts taken across the face served by the cross conveyor. During this process section after section is removed from the main conveyor as the pillar face retreats.

This conveyor transports the coal by a combination of a differential oscillation and a vertical movement. The sectional pan carries upon its bottom a vertically curved track made of angle iron within which the supporting rollers travel. On the floor or mounted on blocking depending upon the desired height similar but reversed tracks are placed. The rollers which operate between these two trackways or raceways are wheels

about 8 in. in diameter with  $\frac{1}{4}$ -in. faces. These are fastened together and held to gage by a 1-in. shaft or axle extending between them. Each pair of wheels therefore constitutes a single rigid roller of light weight that allows the conveyor trough to move back and forth with only a small amount of friction and effort.

As may be seen in the drawing, Fig. 4, the shaking engine is an ingenious mechanical device that imparts a differential oscillation to the conveyor by a combination of an eccentric crank and a toggle joint. This gives a strong mechanism that is positive in its action. The trough moves forward, slowly carrying the coal with it, but is jerked backward quickly. The tracks in which the supporting rollers operate are so curved as both to assist in the movement of the coal and to take advantage of gravity, thus aiding the shaking engine and decreasing its consumption of power. Thus the entire conveyor trough rises as either extremity of the stroke is approached. Upon recession from either end of the stroke the conveyor falls.

Coal upon a conveyor of this kind moves forward in a series of steps or shuffles. The length of oscillation of the chute as well as its speed may be varied by changing the position of the connecting rod in the triangular rocker on the shaking engine, three pairs

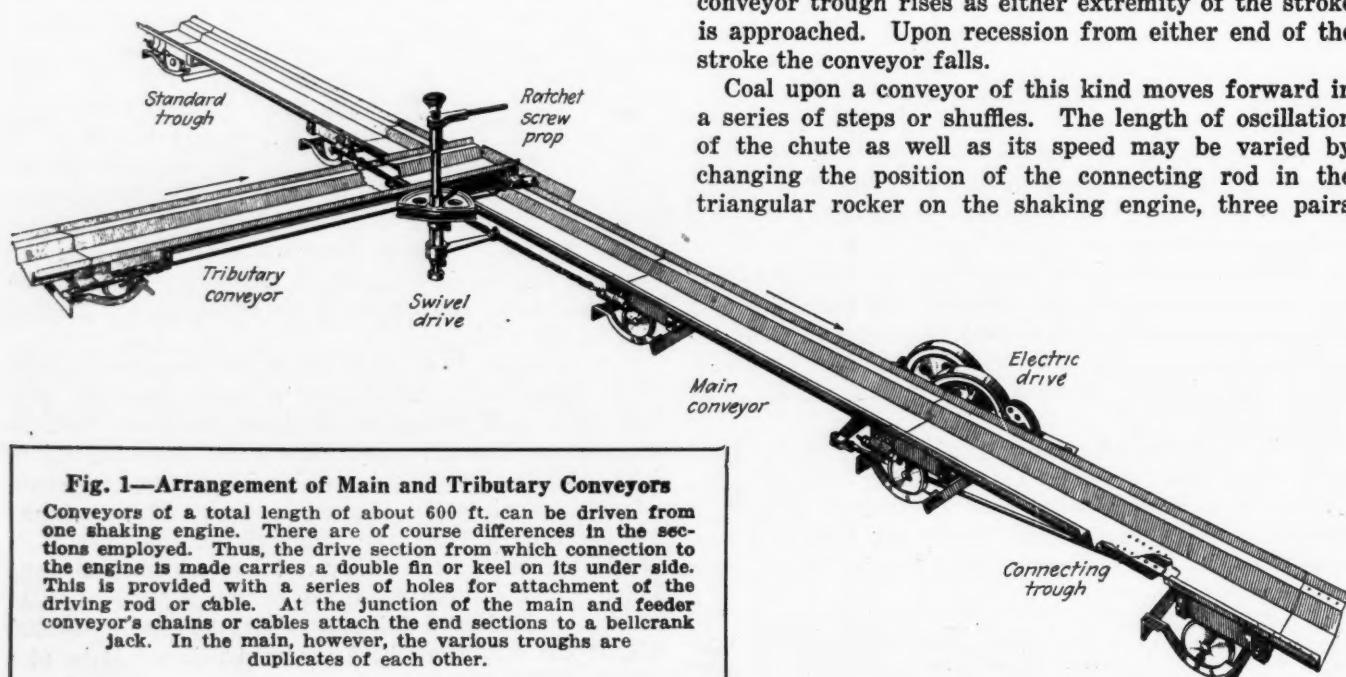


Fig. 1—Arrangement of Main and Tributary Conveyors

Conveyors of a total length of about 600 ft. can be driven from one shaking engine. There are of course differences in the sections employed. Thus, the drive section from which connection to the engine is made carries a double fin or keel on its under side. This is provided with a series of holes for attachment of the driving rod or cable. At the junction of the main and feeder conveyor's chains or cables attach the end sections to a bellcrank jack. In the main, however, the various troughs are duplicates of each other.

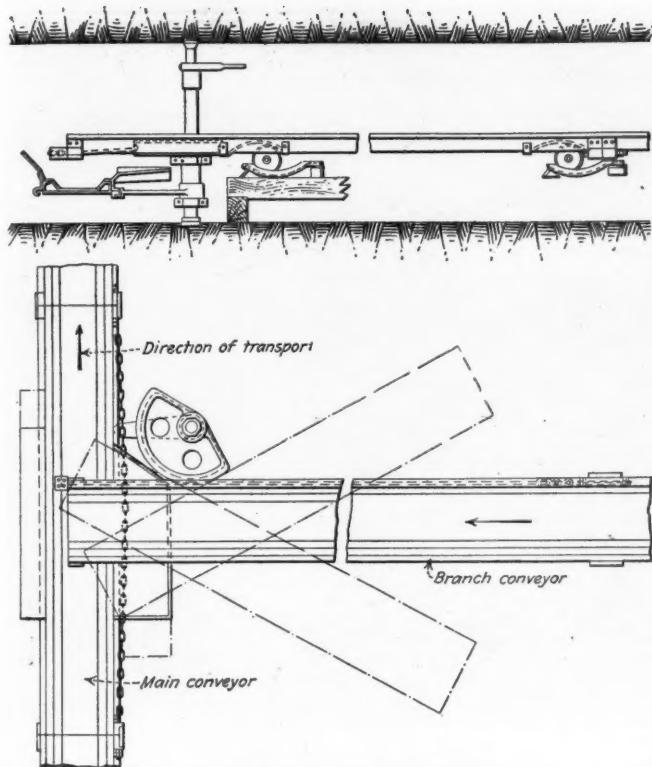


Fig. 2—Cross Conveyor Drive

This shows a quadrant drive which is particularly useful if either conveyor must be slewed from a right angle position. Practically the same result can be accomplished, however, by substituting a second lever for the quadrant here shown, making a true bellcrank. This also reduces the weight somewhat.

of holes being provided for this purpose. When the connecting rod pin is placed in the lower set of holes the operation of the chute is most violent and the steps or movements of the coal are longest. Power consumption likewise is greatest. When set in the opposite extreme position the movement of the coal per stroke is the least, as is also the consumption of power. Accordingly the rod will be connected to the set of holes that will give the desired capacity with the least power consumption. In any case the conveyor makes about one complete oscillation, forward and backward movement per second, or 60 "shakes" per minute.

As shown in Fig. 1, the feeder chute is driven from the main conveyor by means of a lever and quadrant.

This device is mounted on a post jack that may be readily taken down and moved as the conveyor is lengthened or shortened. On the last section of the main conveyor a chain is stretched between the deadeyes at either end that serve to join adjacent sections together. This chain passes through and is bolted fast to the end of a slotted lever attached to the quadrant. A cable is stretched tight around the quadrant and is fastened securely to the deadeyes at either end of the delivery section of the feeder chute. Lever and quadrant are free to revolve and slide up or down on the tube of the post jack placed in the angle between the two conveyors.

By this means practically the same motion that is given the main conveyor by the shaker engine is imparted to the feeder chute. At Toms Creek the cable quadrant, as shown in Fig. 1, has been supplanted by a second lever and chain, transforming the motion-transmitting device into a true bellcrank. This both simplifies and lightens the equipment somewhat.

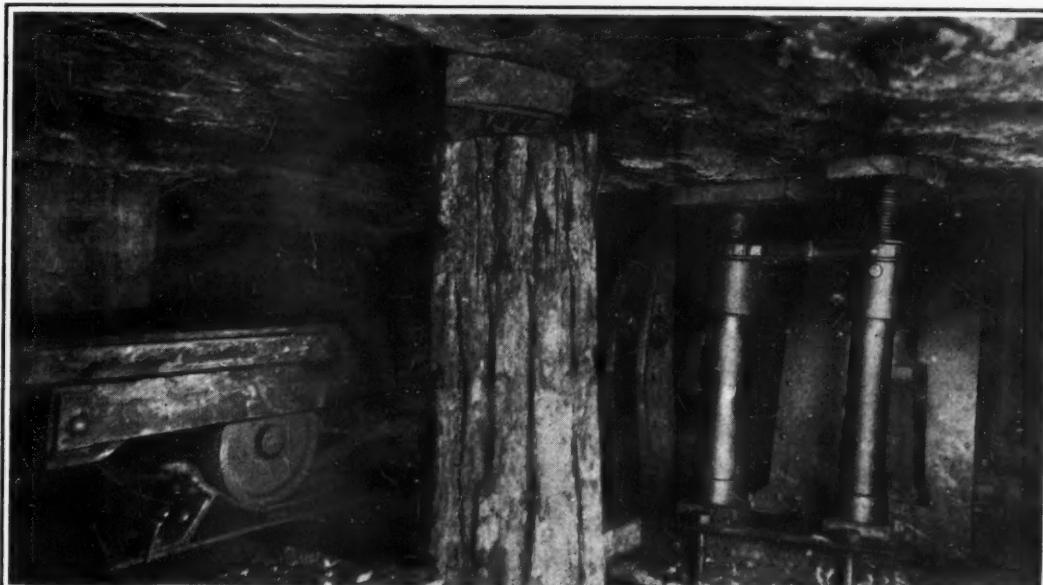
The pans of this conveyor are approximately 10 ft. 2 in. long and overlap 2 in. at the joints, making the net length of each section 10 ft. The metal from which they are rolled is 3 mm. or approximately  $\frac{1}{8}$  in. in thickness. The cross-section, shown in one of the accompanying illustrations, is such as to afford large capacity and great stiffness. A roller runway or track is provided on one end of each section only. The sections are joined together by means of bolts passed through adjacent deadeyes. It requires only a few minutes to add or remove a section, the only tool necessary for this operation being an ordinary wrench. A ratchet box wrench might reduce this time somewhat.

No mine of any size can be worked successfully with a single conveyor. On the other hand, coal companies wisely hesitate about making the investment necessary to equip an entire operation with machines of this kind until they have demonstrated their possibilities in use.

It will be readily perceived by mining men that a conveyor of this kind lends itself readily to a variety of applications. With 600 ft. of conveyor trough and two bellcranks it would be entirely possible to drive rooms 10 ft. wide and 400 ft. long on 210-ft. centers, bringing back 100 ft. of pillar upon either side of the conveyor. With a series of such rooms in operation the faces could be either stepped or maintained at an angle.

#### Shaker Engine

This is front view of the electric shaker engine. Lowering the connecting rod to the next set of holes in the rocker arm would increase the amplitude of the conveyor's oscillation and correspondingly increase the machine's capacity. Raising this connection would have an exactly opposite effect. The power consumed would also be affected in a similar manner and in approximately direct proportion.





### Loading Point

In order to give sufficient headroom at the loading point the roof of the heading has been brushed. The conveyor is blocked up until its discharge end has ample clearance above the car. The trimmer makes no attempt to top the cars, the material being merely piled up to its angle of repose. If too much coal is loaded on a car, some of it will be shaken off on the journey to the tipple. This should be avoided if possible.

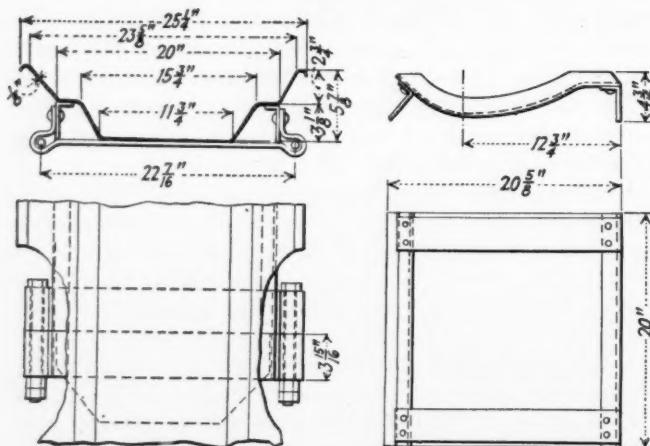
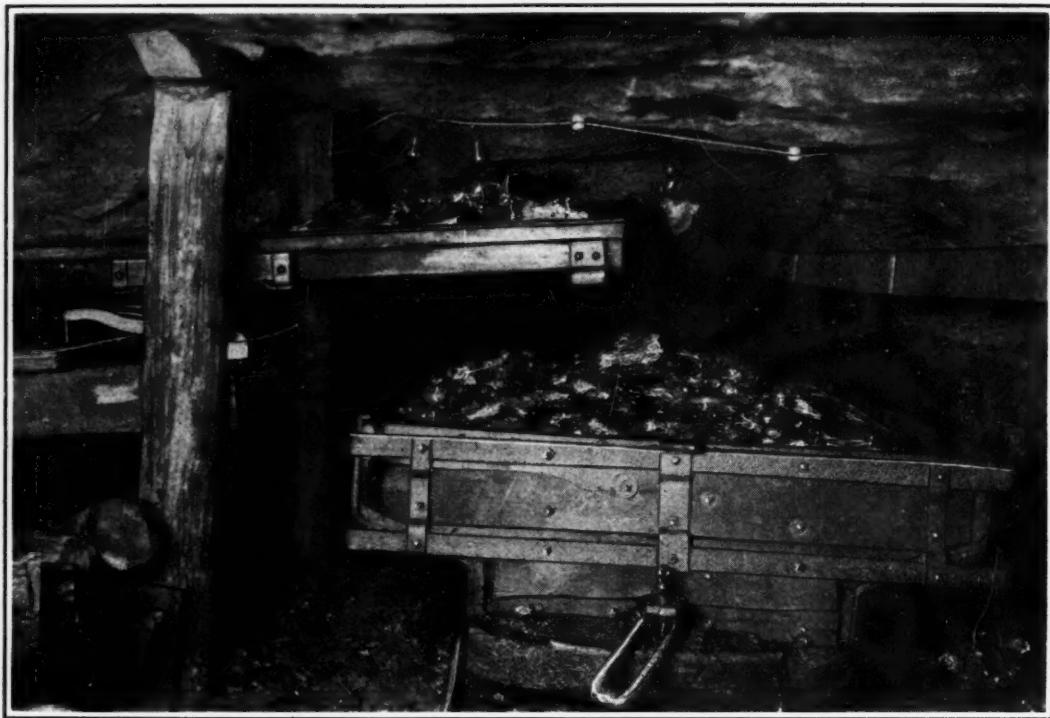


Fig. 3—Details of Trough and Cradles

Several sections of trough can be made each of which is stiff enough to take the thrust of the shaking engine. The contour of the cradles is such as to assist the engine both in stopping and in starting the conveyor at each end of the stroke. They thus aid in decreasing the power consumption

so as to give an oblique breakline for the roof. Room headings in such a case could be driven 800 ft. apart.

Another improvement would appear to be entirely possible if a whole mine were worked by means of these conveyors. The electrically operated shaker engine weighs 4,800 lb. Hence it is heavy and difficult to move especially in the close quarters imposed by thin coal beds. A shaking engine driven by compressed air has been developed that weighs only 1,170 lb. and that takes up far less space than does the electric machine. Although it might at first glance appear to be a backward step to substitute compressed air for electric power, yet where reciprocating motion is desired, air has many advantages—witness the rock drill. If several rooms are to be worked in fairly close proximity to one another, all the conveyor engines could be driven from one centrally located portable compressor installed at some convenient point on the heading.

In capacity, conveyors of this kind approximate one ton per minute. This capacity, however, varies with

the size of the pan and the rapidity or violence of its oscillation. In driving rooms or crosscuts a telescoping or extensible section may be placed at the forward extremity of the conveyor chute. The end of this section practically slides back and forth on the floor. This chute will dig under any loose material that may be present, but its action may be much aided by men with picks who can pull down much of the loose material and roll it into the conveyor trough. Arrangements can also be made to slew this section sidewise so that much of

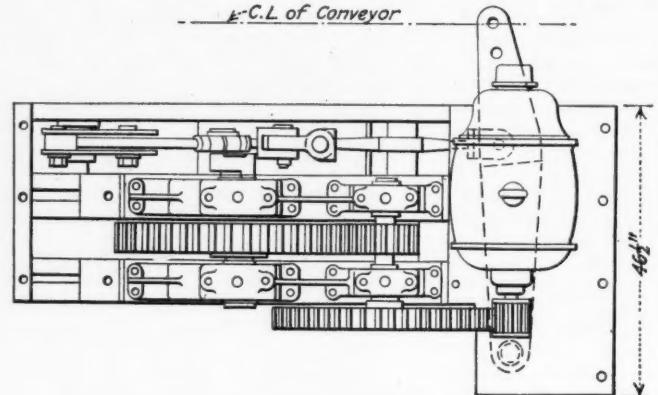
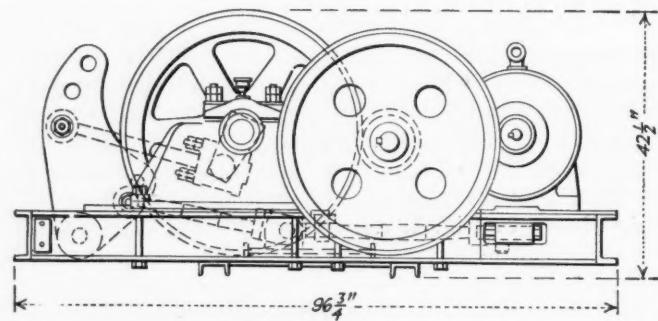
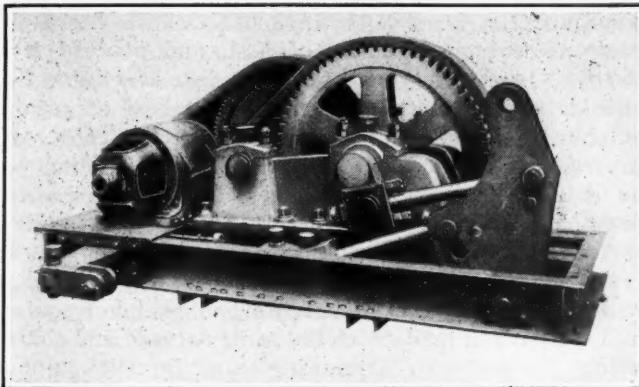


Fig. 4—Electric Shaking Engine

This machine contains two walking beams or levers, one vertical and the other horizontal, the vertical beam transmitting motion to the horizontal lever. By a suitable arrangement of cranks and connecting rods an unequal reciprocation is imparted to the conveyor. The amplitude of this vibration may be adjusted to suit local requirements

the face can be cleaned up in this way. Usually about four-fifths of the coal resulting from any one fall may be loaded out in this manner by the machine itself without any necessity for hand shoveling. From Wyoming comes the report that an undercut in the face of a room has been cleaned up in 20 minutes by the



Side View of Engine

This machine as used at Toms Creek weighs approximately 28 tons. It is equipped with a 20-hp. direct-current motor and draws its energy supply from the trolley or feeder line.

aid of this extension chute. This gives a hint of the possibilities of this machine in "narrow work."

Many of the advantages claimed for the use of the conveyor in coal production are self-evident, but their relative importance will depend largely upon local conditions. Thus the conveyor is low in height compared with a mine car, and the distance through which the

coal must be raised in order to be deposited upon it is relatively small. For a given expenditure of muscular energy, therefore, a man can load many times as much coal over the side of a conveyor as he can over the side of a car of even moderate height. In the case of the car much energy is wasted in lifting and lowering the body, whereas with the conveyor muscular effort is confined largely to the arms.

Use of the conveyor obviates the necessity of laying track from the heading to the face. This in turn makes it unnecessary to brush top or lift bottom in these passages. There is no carrying or long-distance shoveling of the coal for the reason that the conveyor is always near the face and consequently close behind or beside the shoveler. This short shoveling distance also entails less fatigue.

With a conveyor the consumption of power is of secondary importance. Inasmuch as mechanical energy costs only a small fraction of the price paid for muscular effort, the mine operator may economically be prodigal in its use wherever it can be made to supplant human brawn in mining operations.

The combined result of all these effects is an increase in the tonnage produced from the employment of a given number of men; or, what is the same thing, the cost per ton f.o.b. railroad car is decreased. This is the ultimate desideratum toward which all operators are striving. It will not be accomplished by the installation of one or two conveyors. Experimentation with a few such units, however, will tend to show the possibilities inherent to complete mechanization and thus point the way to cheaper coal.

#### Old Beehive Ovens Are Again Pressed Into Service



The coal larry (upper left) and the combination coke screener and loader (lower left) were built hurriedly in the company shop at Gallitzin. It is here, at the No. 10 mine, that the ovens are located. The larry, which holds approximately 5 tons, was built from an old 4½-ton combination battery-and-trolley locomotive, and from parts of a scrap tipple. No sheets of sufficient size were available for constructing the bin of the larry, so material was "made." Scrap sheets of odd size were cut, fitted, and electrically welded to form large sheets for the sides of the bin.

Acetylene cutting and electric welding, also played an important part in the construction of the coke screener and loader. The screening is accomplished by slots in the bottom plate of the flight conveyor. These miniature bar screens were made by cutting

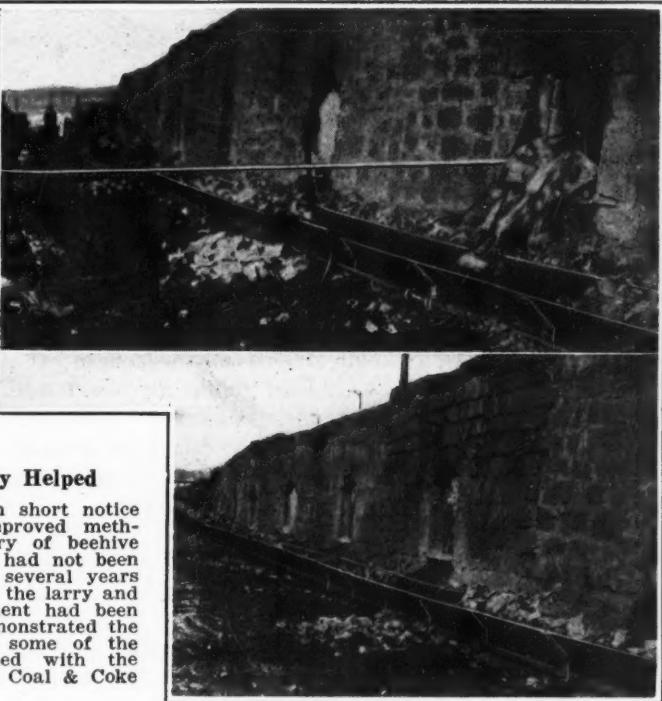
#### Ingenuity Helped

Starting on short notice and with improved methods, a battery of beehive ovens which had not been operated for several years and at which the larry and other equipment had been scrapped, demonstrated the ingenuity of some of the men connected with the Pennsylvania Coal & Coke Corp.

rectangular holes in the plate and welding strips of steel across the openings, forming slots parallel to the direction in which the coke moves.

The upper half of the loader is mounted on a pivoted support in order to facilitate repairs, and cleaning of the pit. When either becomes necessary, the loader is disconnected in the center, the upper section is then tipped to a horizontal position, and the lower portion, which is on wheels, moved out below the upper section.

The two pictures at the right show how an old conveyor is installed in front of the ovens for moving the coke to the loader. This conveyor is one which a few years ago was tried in the mines and found unsuited to underground conditions. The snapshot at the upper right shows the coke dropping directly into the conveyor.



## Surface Damage and Coal Betterment Waken Much Interest at A. I. M. E.

COAL OPERATING PROBLEMS were at the forefront during some of the closing sessions of the American Institute of Mining and Metallurgical Engineers' 133d meeting in New York City on Feb. 17, following the two days' proceedings reported in *Coal Age* last week. In the final coal conferences a notable report on subsidence was made by the Institute's coal and coke committee. Discussions in which coal men took part covered such subjects as coal cleaning, the difficulty of removing organic sulphur from coal, the use of X-rays for differentiating pyrite, shooting as a cause of mine squeezes, the mining of oil sand, and various recent developments in industrial relations.

Evaluation of coal, advocated by R. H. Sweetser in Tuesday's meeting, seemed to be the animating spirit of the paper by A. C. Fieldner and W. A. Selvig, which formed the opening feature of Wednesday morning's coal session. Unfortunately, we have had specifications which assumed a differential value for coals of varying quality, but we have had no scientific and carefully prepared data on which to base those differentials accurately.

It was suggested in Tuesday's meeting that this was a problem that the consumers of coal, the metallurgists, and gas men for instance, could best attack each for his own interest. Mr. Sweetser calls not for general principles so much as for actual figures that will evaluate differentials truly and not arbitrarily, and these Messrs. Fieldner and Selvig did not attempt to give in their article on the "Relation of Ash Composition to the Uses of Coal."

### X-RAY REVEALS SULPHUR

Ansell St. John said that he had made experiments in the use of X-rays to determine the occurrence of ash. The fractures in the coal show much inert matter, and the X-rays confirm the fact that most of it has found lodgment there. Later Mr. St. John said that, in coking, organic sulphur became inorganic, as could be determined by X-ray methods. X-rays passing through truly colloidal matter give a different impression to that given when crystalline material is interposed. The organic sulphur is a chemical part of the colloid; the pyrite or marcasite is a crystal mixed in the mass. The X-ray differentiation is quite sensitive. When 0.2 per cent of crystals were intimately mixed in a mass of colloids, the presence of the crystals was made clearly evident in an X-ray examination of the mixture.

T. M. Chance said that unfortunately the washing of coal sometimes increased sulphur rather than decreased it. Thus, a piece of coal containing 2.2 per cent of organic sulphur and no inorganic might in washing be purified of non-pyritic ash to such a degree that the percentage of sulphur instead of falling to 1.8 per cent might actually rise to 2.8. The coal in the No. 6 bed of Illinois had a high organic-sulphur percentage and in places this fact made it utterly unsuited for coking. H. M. Chance, father of the previous speaker, declared that the presence of organic sulphur was, forty years ago, recognized by A. S. McCreath, of the Second Geological Survey of Pennsylvania. He found sulphur for which he could find a mate neither in iron nor in calcium.

The Hay Creek coal field, some 50 miles north of Deadwood and the Black Hills, in South Dakota, has a sulphur percentage in places of 9.31, and none of it is pyritic. In examinations of coal for coke every attention should be paid to the presence in the coal of organic sulphur that could not be removed mechanically. He pressed for a statement whether organic sulphur was as undesirable as inorganic, and got all kinds of assurance from A. R. Campbell and Mr. Sweetser, but he said their statements were largely dogmatic. He would await certainty until a blast furnace in a trial of several days had been run with coke of high organic-sulphur content and comparison made with the same furnace and charge using a coke with a countervailing pyritic sulphur percentage.

### TOO LOW IN SULPHUR FOR WASHING

Thomas De Venney said that in the coal of the Portsmouth Byproduct Coal Co. there was more organic than pyritic coal, and the coke had the same characteristic. He said that 0.40 is about the lowest level of organic sulphur in coal and that any coal like that of his company that ran as low as 0.50 to 0.60 per cent sulphur was almost beyond beneficiation as far as sulphur was concerned. Mr. Fieldner agreed that 0.40 was about the correct low limit for organic sulphur.

"The Selection of Coals for the Manufacture of Coke" was presented by Harold J. Rose. Mr. Rose declared that experience in the construction of byproduct ovens had made it possible to coke coal having 21.1 per cent of volatile matter, as in Pierce County, Wash. Coal having 34 per cent of volatile matter, and coming from the Pittsburgh seam, had also been successfully coked. The coking time in the first case was 11 hr. 47 min. and in the second case 11 hr. and 40 min.

Mr. Rose showed that the carbon-oxygen ratios gave the best division for the separation of coking from non-coking coals, but said that the oxygen percentage lines would be equally suggestive, as they paralleled the lines drawn to exhibit the carbon-oxygen percentage. The surest way to test cokability was to coke the coal.

### THE COST OF COAL WASHING

T. M. Chance then addressed the institute on the "Mount Union Sand Flotation Plant for the Preparation of Bituminous Coal." *Coal Age* readers can find a description of this plant in the issue of Dec. 3, 1925, pp. 769-773. Mr. Chance showed by a cost sheet that the coal was washed for 9.64c. per ton, including charges for power at 0.9c. per kilowatt-hour, maintenance at \$1,200 per month, and fixed charges, taxes, etc., at 12 per cent on \$140,000. He added that of the total labor cost of 4.8c. per hour, 75 per cent, or 3.6c., was tipple labor that would be required whether the coal was washed or was passed through the tipple without washing. At least 50 per cent of the rest of the cost would likewise be necessary for a non-cleaning, screening tipple. The total operating cost of such a tipple would, therefore, be about 6.02c. per ton. If hand picking were employed to the extent shown as necessary in the former operation of the Mount Union tipple, an added labor cost, resulting from the need of employing not

fewer than twenty-five men, would be incurred, or 5c. per ton, making the cost 11.02c. per ton.

At the mining methods session George S. Rice described "Oil Sand Mining in France and Germany." The interest in this for coal men rests in the fact that whereas with exhaustive drilling 20 per cent of the oil can be taken out, with the driving of headings through the oil sand another 40 per cent can be obtained. Perhaps all the sand may be removed in some cases, but at Pechelbronn, in Alsace, and Wietze, to the north of Hanover, Germany, the sand is so loose and the pressure so great that complete extraction is unlikely by any method now in general use. In Wietze all the roadways are driven with forepoling and breast lagging.

The interesting feature of the situation is that oil has been extracted in Texas by Leo Ranney's method of undermining the sand with galleries and drilling upward from these headings to the oil above. Pipes are provided to bring the oil to the shaft.

The intention is to develop this method of mining extensively, as it is said it will be more efficacious, especially when compressed air or live steam is forced into the sand. The purpose is to divide the field by driving galleries so as to cut up the oil area into squares of forty acres each, providing 132 "wells" spaced 10 ft. apart on each side of the square. The mines may be quite deep, but one shaft is less expensive than a multiplicity of deep wells. It is stated that the Standard Oil Co. of New Jersey proposes to give the system a careful trial.

#### VALUABLE REPORT PRESENTED

In the afternoon the committee on ground movement and subsidence received the notable report of H. N. Eavenson on the surficial effects of coal mining. Its sixty-five pages constitute a book rather than an address, and the mining public owes the committee quite a debt for this elaborate and valuable report. John A. Garcia said that he believed the committee should consider the effect of impact in shooting. Two companies in Illinois worked two seams one above the other, the upper being a drift mine with a 5-ft. seam and lower a shaft mine with a 7-ft. seam. A squeeze in the lower mine was followed by a falling-in of the upper mine, and a suit was brought against the operator of the lower working. A counter suit was brought by the latter, alleging that the squeeze in the lower mine was the result of heavy shots in the upper. In fact, these shots were so heavy that they extinguished lights in the bed below. Mr. Garcia thought shooting an important element in roof movement and pressure.

J. B. Porter declared that the pressure of plastic material increased the effect of concussions such as earthquakes. Plastic material has a different wave period from sandstone, and a concussion is apt to cause side movement. Perhaps there was a plastic bed, he said, between the two mines which had the disastrous experiences narrated by Mr. Garcia.

C. M. Young declared that the roof often tended to choke when falling, and so yielded support. R. D. Hall declared that the roof could not fall far if it choked, and so could not choke except perhaps by an infinite series of falls. Mr. Rice declared that the material could fall at the top of the arch of failure and roll down so as to protect the haunches.

S. A. Taylor said that a certain Englishman in earlier years had definitely stated that subsidence did not occur if the bed mined were ten times as deep as the bed is

thick. This erratic statement showed how time modified opinion. Mr. Eavenson said that, in one instance, the extraction of a bed 4 ft. thick and 2,970 ft. deep had caused a marked subsidence—1.44 ft., or 36 per cent of the seam thickness. Mr. Young delivered an interesting address on the ground movement due to a salt well in Hutchinson, Kan. Effort is being made to get information as to subsidences that occur as the result of the removal of oil, sulphur, and salt, but unfortunately the information as to the area and degree of extraction makes any conclusions somewhat nebulous.

#### INSTITUTE AWARDS MEDALS

At the banquet on Wednesday evening Wilbur Nelson, state geologist of Virginia was toastmaster. The speakers were J. V. W. Reynders, C. L. Kinney, Jr., J. M. Callow, T. C. Denis, G. S. Davidson, Scott Turner, and S. A. Taylor. Award of the Robert W. Hunt medal was made to C. L. Kinney, Jr., for his paper on the "Economic Significance of Metalloids in Basic Pig Iron in Basic Open-Hearth Practice." J. M. Callow was awarded the James Douglas Medal for distinguished services in the concentration of ores, particularly in flotation methods.

W. L. Saunders, it was announced, has provided an award for those contributing in the course of the year the most notable advance in the art of mining. On Thursday morning ninety members of the institute drove to Bear Mountain to see the new suspension bridge across the Hudson, which has the longest suspended span in the world. They lunched at the Bear Mountain Inn and later returned to New York.

A symposium on explosives the afternoon of Feb. 17 began as a hangover from the morning session on mining methods, with R. M. Raymond presiding. Lantern slides were shown illustrating the construction details and method of operating an automatic drill tempering machine. This device will handle and temper one drill steel every 30 sec.

#### GOOD SHOOTING PRACTICE ILLUSTRATED

It was stated that good practice with hand methods was represented by the sharpening and tempering of drill bits at the rate of 12 pieces per man per hour. The shop cost was about 7c. per piece, making the cost of sharpened steel at the face approximately 10c. An excellent gage of the quality of such steel is the amount of work the user is able to accomplish with each sharpened bit.

Most trouble with drill steel is caused by overheating of the metal. Mr. Stewart stated that he once conducted a test on the tempering of steel and found that his blacksmith was tempering at approximately the critical temperature on a rising heat. Checking this man's work with a magnet showed that it was practically correct. An average of 18 in. of hole in the hardest kind of quartzite was drilled with steels thus treated while in rare instances 36 in. was attained.

Consideration of explosives was then taken up, with B. F. Tillson as chairman. The first paper presented was one by Theodore Marvin, managing editor of *The Explosives Engineer*. This dealt with the blasting of coal in the mines of the United States. Mr. Marvin exhibited thirty-six lantern slides showing good coal-shooting practice under varying conditions. He explained that the arrangement and loading of shotholes must necessarily vary from point to point even in the same mine if the largest reliable percentage of lump coal is to be obtained. Most operators have made no

consistent effort to better their coal so far as its blasting is concerned.

Mr. Marvin then showed a few slides illustrating somewhat imaginatively the result, on the quality of the product, of using a high explosive and a permissible. He also displayed a second short series showing the effect of cushioned and non-cushioned blasting.

The question was then asked, "What is a high explosive?" The answer was that a 60 per cent gelatine dynamite might be considered typical. Ammonium nitrate is now used as a base for mine explosives. Practically none has a nitro-glycerine base.

Someone then asked what was the maximum percentage of lump produced in American coal mines. The reply was that this depended much on the nature of the bed worked. In most mines, under present conditions, from 33 to 40 per cent of lump is attainable, while some operations realized as much as 67 per cent.

It was then asked "What is the effect, from a safety standpoint, of using delay exploders? Do they cause windy shots?" In reply it was stated that such an effect was not markedly apparent. Practically all the anthracite mined is shot with fuse, the shots necessarily occurring in sequence. Few, if any, explosions in bituminous mines have resulted from the use of delays. In Utah, where the coals worked produce extremely inflammable dusts, the action of these exploders is feared, yet nevertheless some delay caps are being used with good results.

#### THE POSSIBILITIES OF L. O. X.

The next paper, on "Liquid Oxygen as an Explosive," by Frederick W. O'Neil and Herman Van Fleet, was presented by Mr. O'Neil. An abstract of this paper will appear in a forthcoming issue. There has been much misconception, rumor and conjecture concerning this new explosive, its possibilities and limitations. This authoritative treatise therefore, comes at an opportune moment.

At the conclusion of this presentation someone asked what is the smallest plant to be had for the manufacture of liquid oxygen. It was stated that a plant with a capacity of 16 liters, or approximately 40 lb., per hour is the smallest commercial outfit now procurable.

Several other questions were asked and answered, this discussion bringing out the following salient information: The temperature of exploding L.O.X. is unknown. It is believed to have a long hot flame similar in characteristics to that of black powder. In action it is closely equivalent to 40 per cent dynamite although its speed of explosion propagation or its quickness is the same as that of 60 per cent dynamite. Water forms an excellent stemming, but when used freezes. Cartridges of the new explosive can be made by anyone. About 1½ in. is the smallest diameter of cartridge that has been found practicable and this must be fired within 10 min. after being introduced into the shothole. Six-inch cartridges may remain unfired in a rock drill hole for as much as 2½ hr. and still give excellent results.

In closing the meeting Mr. Tillson remarked that it had been an extremely interesting session, highly profitable from an educational standpoint to all who attended it. If the mining industry could have as comprehensive and as authoritative information upon other explosives as quickly after they have been developed as is now available concerning L.O.X. much

more rapid progress in blasting methods and practice would be possible.

The group meeting on industrial relations, held Feb. 17, drew only a few members of the Institute, who listened to a paper by George E. Roberts, vice-president, National City Bank, on "Employee Stock Ownership" and an extended recital of what Mitten management has done to promote better industrial relations on the Philadelphia Rapid Transit Co., by J. M. Shore, editor of the street railroad company's employees' magazine. C. J. Hicks, Standard Oil Co., who also was scheduled to address the meeting, did not appear.

#### PROBLEMS OF THE BIG UNIT

With the growth of society from the primitive system in which human wants were simple and contacts few as compared to the complex, highly specialized social systems of today, the trend away from the small business unit to the big corporation was inevitable, said Mr. Roberts. It requires no stretch of imagination, he declared, to foresee the day when these large units, owned by the employees and the public they serve, will supersede the old system of ownership of a multitude of small industries by many individuals.

Most of the troubles which the bigger unit faces, continued the paper, read in Mr. Shore's absence by his son, are due to the development of the industrial organization beyond the comprehension of the ordinary worker. Nevertheless, fundamentally the complex organization is the same as the simple type. The modern industrial system, however, will break down unless the spirit of co-operation between management and worker exists. The engineer, the author pointed out, is the natural mediator between capital and labor because he understands the problems of both sides. Stock ownership offers the best method of sharing the profits of industry with the worker. It is superior to ordinary profit-sharing schemes in that it adds responsibility.

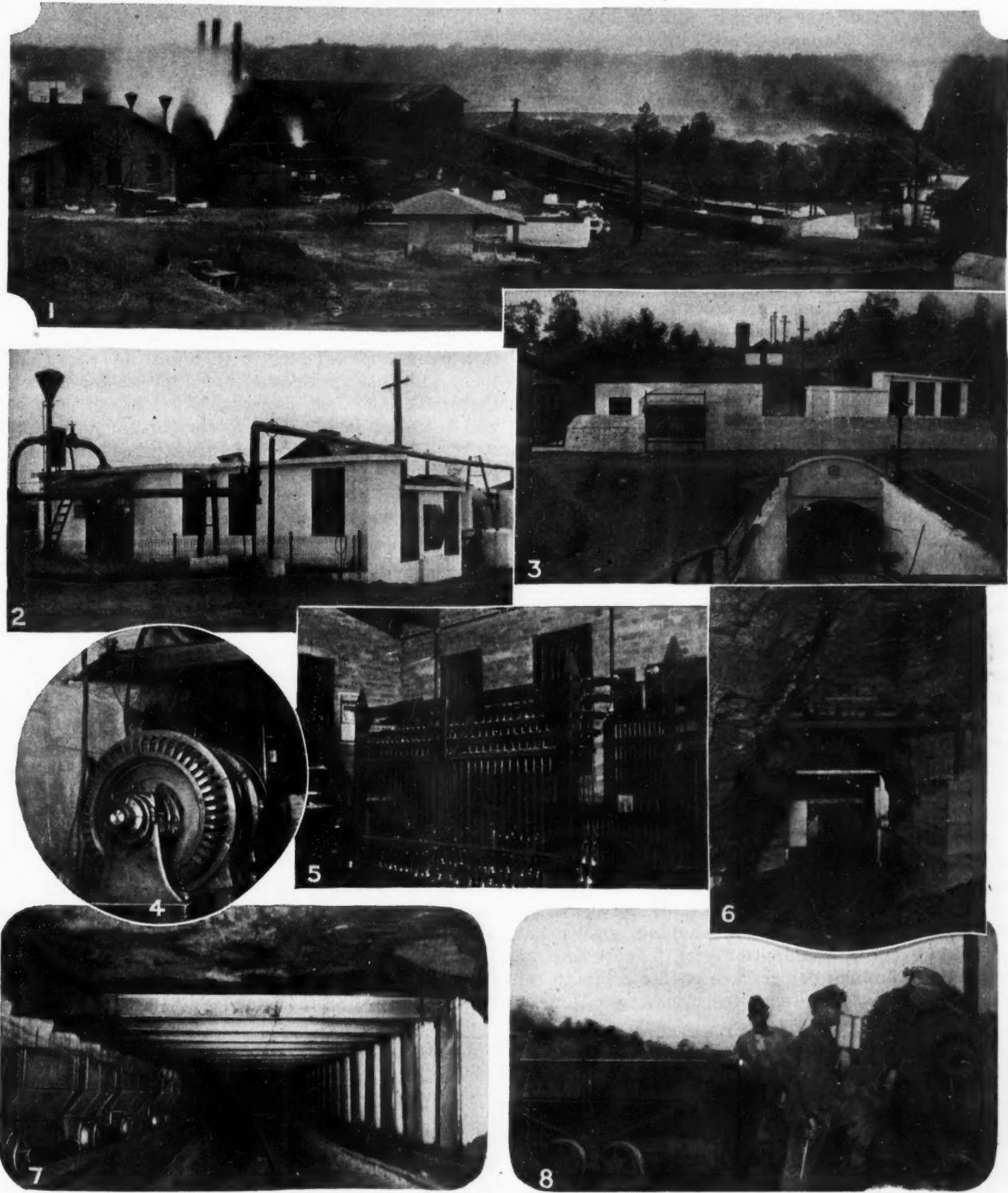
#### MITTEN FINDS LIBERALITY PAYS

Mr. Shore's paper explained that Mitten management, by convincing the worker it was fair and ready to share the benefits of improved operation with those who made such betterment possible, had lifted a company facing bankruptcy to a dividend-paying level and had developed an employee ownership scheme which now takes in one-third of the common stock of the company. Under the latest scheme, recently adopted, wages are based on the purchasing power of the dollar, plus a bonus for increased efficiency. The stock owned by the employees, he said, had been purchased out of wage bonuses accruing to the men. These bonuses had been based upon increased gross earnings.

A suggestion thrown out by the speaker that the mine worker was not as intelligent as the street-car employee drew a sharp defense of the mine worker by Sidney Jennings, past president of the Institute, and Clarence T. Starr, Chamber of Commerce of the United States. Doubt was voiced whether conditions in the mining industry were such that a stock-selling scheme would be successful. The position of the mine, beaten to and fro by competition, and of the public utility, enjoying government protection of earnings, was contrasted.

The ladies are taking more and more an active interest in the meetings of the Institute. For them a full program was provided having no relation to mines or metals.

## An Enterprising Coal Operation in Alabama



© Wide World Photos.

### Well-Equipped Virginia Mine of the Gulf States Steel Co., at Bessemer

(1) View of the top works showing at the left the lamp house and engine room, and at the right the main slope and steam-driven fan. (2) Close-up view of the fans. In the foreground is steam-driven multi-bladed fan rated at 100,000 cu.ft. per minute,  $\frac{1}{2}$ -in. water gage, which provides the regular ventilation for the mine. Adjoining it, at the right, is another steam-driven fan, of an older type, which serves as a spare. (3) Main slope and double fan. Note the absence of trash on the surface. (4) The machine in this

manually-controlled substation is a 200-kw., 250-volt synchronous motor-generator set. Power at 2,300 volts for operating the set is transmitted from the surface through a 680-ft. borehole by a three-conductor armored cable. Above the machine is an I-beam support for fastening tackle in case heavy repairing becomes necessary. (5) Concrete walls and steel timbers on the main slope below sixth right. At some points on the slope as much as 15 ft. of top has come down. (6) View in lamp house where

an addition to the power house engine room provides space for charging and caring for the 285 permissible cap lamps. (7) The 22-ft. roof span in this three-track yard is protected by 12-in. I-beams set on 6-ft. centers. The steel is supported on concrete posts and is lagged with rails and wood. (8) L. E. Rich, master mechanic, inspecting the man trip while L. E. Geohegan, general manager (right), and W. M. Mason, mine superintendent, chat a few minutes before entering the mine.

## Modified Hand Firing Cuts Mine Fuel Consumption

Boilers that Formerly Used 1,600 Tons of Mine Run per Month Were Raised and Feeders Added—Now 700 Tons of Slack Suffices

By J. H. Edwards  
Associate Editor

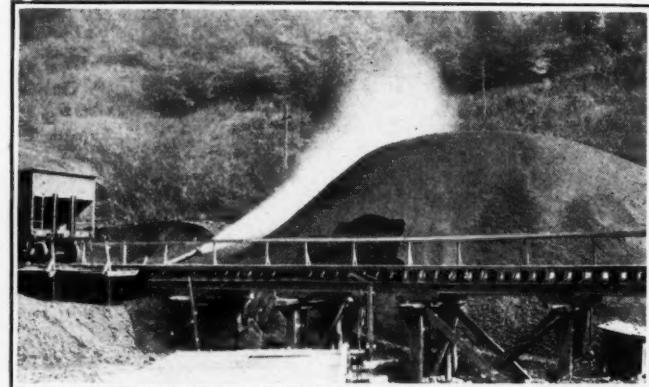
A 56-PER CENT SAVING in fuel consumed at the mine has been effected by the Gatlift Coal Co., of Gatlift, Ky., by a change in firing method and by the investment of a relatively small amount of money in boiler-room improvements. Formerly this company burned mine run coal in its plant while paying the cost of hauling a certain quantity of fine, practically unsalable coal from the tipple to a refuse dump. Today it consumes the fine stuff and markets the run-of-mine.

This plant supplies compressed air and electricity for three mines which produce a high grade of bituminous coal for the domestic market. It is located close to a twin tipple which in addition to the usual shaking screens is equipped with a vibrating screen for removing all coal under  $\frac{1}{2}$  in. This slack runs so high in ash that it is difficult to market, and much of it was formerly dumped as refuse. It had to be loaded into railroad cars, and hauled several miles.

The power plant equipment consists of seven, 72-in. x 18-ft., 150-hp., horizontal-return-tubular boilers, a steam-driven air compressor, and two generators, one engine- and the other turbine-driven. The boilers are equipped only with natural draft, which is supplied by individual steel stacks. A barometric condenser and spray pond complete the plant layout.

As originally installed, the furnaces were fired by ordinary hand methods, and judging from what the plant engineer and company officials say, it was one continuous fight to carry the load with six boilers. Now the same load is carried easily with but four boilers, burning 700 tons of the slack per month as compared to 1,600 tons per month of mine-run—the former fuel consumption.

This decided saving in quantity, and the change to a lower grade fuel was the result of rebuilding the boiler settings and installing inclined shaking grates and overhead bunkers in combination with furnace feeders. Now only one fireman per shift is needed as compared to a minimum of three under the old system.



The Ash Conveyor in Action

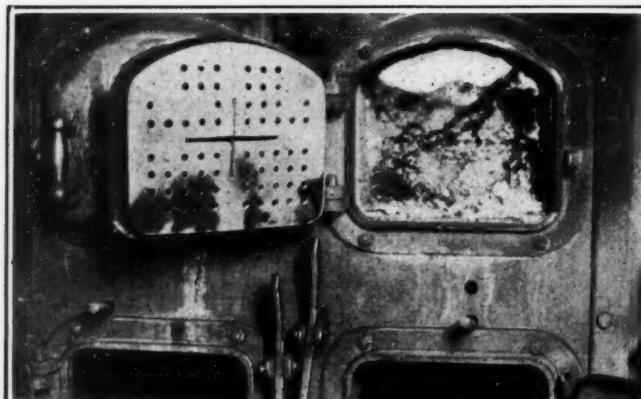
Except for one 30-deg. bend this steam-jet conveyor is a straight pipe. Although this type of conveyor uses about 150 boiler-hp., it need be operated but a few minutes each day. The platform in the foreground is a driveway for a truck which hauls cinders for road making.

The boilers were raised about 2 ft., bringing them to a point approximately 5 ft. above the upper end of the grate, and an equal distance above the bottom of the fire doors. Just above the fire doors of each boiler was installed the feeding mechanism of a mechanical stoker. The inclined shaking grate, was set on an angle of about 20 deg. and is provided with dumping sections at the lower end.

Fuel is fired by the coking method the feeder being operated intermittently. The coal is dropped in a heap on the grate in front of the fire doors. After a pile about 18 in. high has accumulated the feeder is stopped for a few minutes or until the volatiles have been distilled off. The fireman then opens the door and with two or three strokes of a hoe pushes and distributes the coked fuel down over the grate.

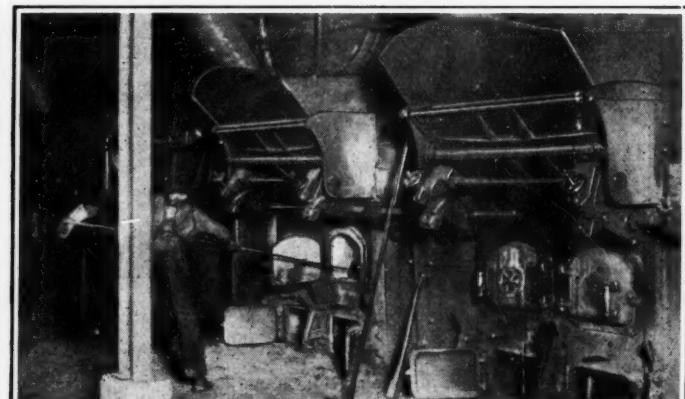
Each fire is cleaned twice a day by the ordinary hand method. Half of the grate is cleaned at a time and the clinker, after being broken up, is dumped at the rear end of the grate. The ash is disposed of by a steam-jet conveyor, the intake openings of which are on the floor in front of the ash pit doors. The ashes are raked up the sloping bottom of the pit and out on the boiler room floor where they are fed into the conveyor openings. There is but one bend in the conveyor pipe, a 30-deg. elbow which gives the discharge the desired elevation.

Inasmuch as the coal is spread by hand and the fires must be cleaned periodically, the method employed at Gatlift differs from hand firing only in that fuel is



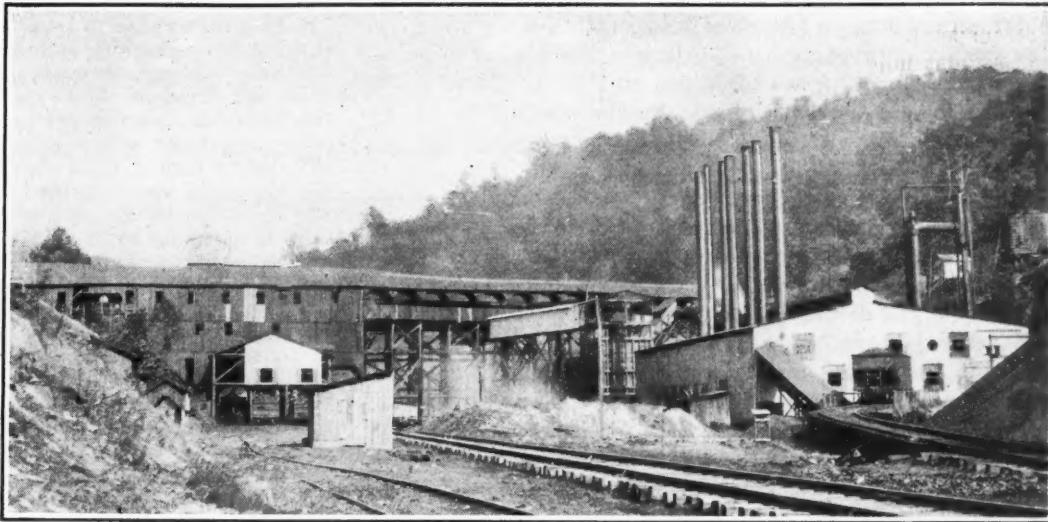
New Method Combines Automatic Feed and Hand Firing of These Boilers at a Kentucky Mine

The photograph at the left shows where the mechanical feeder drops the fuel and where it is left to bake for a few minutes before the fireman pushes it down over the grate. This differs from hand firing by the coking method only in that the coal is deposited mechanically instead of by scoop. In the other picture the fireman is spreading the coked fuel. Only two or three strokes of the hoe are necessary. Mechanical feeding minimizes the time that the fire doors must be kept open.



**Twin Tipple and Power House**

Recent improvements to the tipple included the addition of a conveyor for delivering screenings to the boiler room. At the time the photograph was made the conveyor was not completed, hence the car of fine coal standing at the right ready to be dumped for plant fuel. The boiler room contains seven 150-hp. return-tubular boilers.



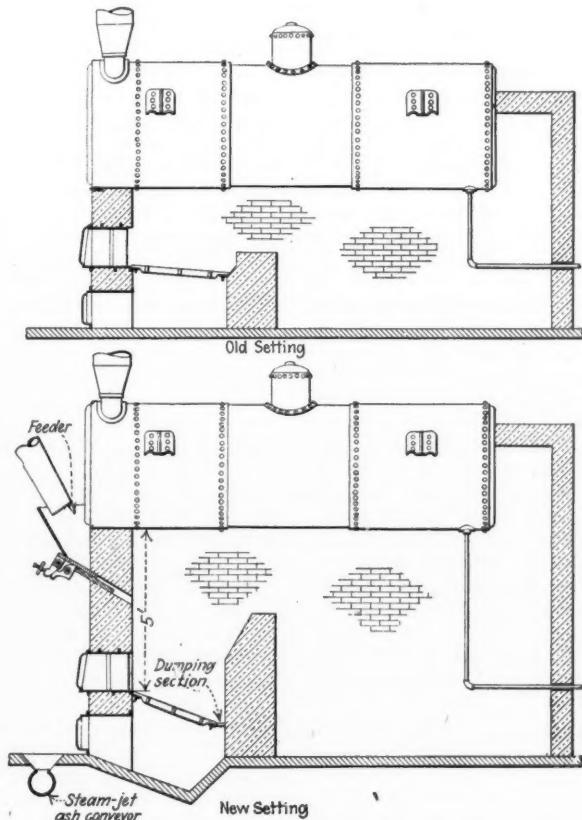
introduced into the furnaces by mechanical means instead of by the use of a hand scoop. The gain creditable to the use of feeders lies in the labor saved and in the better combustion efficiency obtained through a reduction in the quantity of excess air admitted.

A definite volume of air is required for complete combustion of a certain quantity of fuel. Assuming that the correct volume of air is being admitted, then, if the fire doors are opened without first closing the stack damper, there will be an inrush of cold air which will lower the furnace temperature. The waste from this cause is much reduced by mechanical feeding.

No doubt the increased volume of the combustion chamber in the new setting also had a material effect in increasing the efficiency. Still another reason for the

better results obtained lies in the fact that there is now but one fireman per shift and therefore no divided responsibility.

Although a large proportion of the hand-fired mine plants have been displaced by purchased power, there still exist a goodly number, at which economies similar to those enjoyed at Gatliff could be realized through additions and alterations to the present equipment. In many instances the mere fact that a mine plant is equipped with horizontal return-tubular boilers is a good indication that it is exceedingly inefficient and therefore a place that visitors are not urged to see. This, however, does not hold true at Gatliff. At this plant the officials point with pride to the boiler room and recount the savings resulting from the improved method employed and the equipment installed.

**New Setting Gives Big Combustion Chamber**

The principal reason for raising the boiler was to make room for the feeder between the fire doors and boiler doors. This feeder drops the fuel in a heap on the grate, just in front of the fire doors.

## Bureau Offers "Graduate" Course In Mine Rescue<sup>1</sup>

By J. J. Forbes<sup>2</sup> and G. W. Grove<sup>3</sup>

A NEW SUB-DIVISION of safety service, called the Safety Extension Service was formed in the Bureau of Mines on July 1, 1925. Soon after the organization of this section one of the important things done was the outlining of a course for coal mining men known as "Advanced Instructions in Mine Rescue and Recovery Operations." This course outlines the duties of all the men at the time of a mine disaster, from the general manager down to the men who do the actual recovery work. A total of 128 mine superintendents, foremen and others who would be in charge of safety and recovery work at mines have finished the course.

The need for instruction of this kind has been recognized for a long time as the local mine organization after a disaster is usually disorganized and has little or no idea of what procedure to follow, thereby losing valuable time, retarding the recovery work, and possibly sacrificing what little chance there may be of saving life.

An effort is made in this course to obtain men who are a permanent part of the mining organization, such as underground officials and superintendents with par-

<sup>1</sup>Published with the permission of the Director of the Bureau of Mines.

<sup>2</sup>Chief engineer, Safety Extension Service, Bureau of Mines.

<sup>3</sup>Assistant mining engineer.

ticular stress laid on the close co-operation with state mine inspection departments. All men eligible for this course must hold Bureau of Mines or state certificates covering mine rescue training. At the completion of the course a certificate is issued to all who satisfactorily complete the work.

The initial classes were conducted at the Orient Central Rescue Station at Orient, Fayette County, Pa., where the officials of the station and the contributory companies co-operated with the Bureau engineers in working out the details of the course. Fifty-seven men were trained there in four classes of one week each. Following the Orient training, three classes were held at Thomas, W. Va., where 51 officials of the Davis Coal & Coke Co. and representatives of the departments of mines of West Virginia and Maryland completed the course. In addition classes were held at Boswell, Pa., and Glen White, W. Va.

Briefly, this course of instruction starts with a lecture on the properties of mine gases, with particular stress on sources, explosive limits of methane and air, physiological effects, etc. Then follow demonstrations in a small lamp gallery with instruments used in the detection of mine gases, such as approved types of flame safety lamps and the Burrell Methane Indicator.

The course next covers methods for the detection of carbon monoxide or the abnormal conditions found in mines after explosions and during mine fires, using the iodine pentoxide (Hoolamite) and the pyrotannic acid methods, for the quantitative determination of carbon monoxide in blood and air.

After classes have been given a thorough drilling on the instruments used in the detection of mine gases, protective measures against these gases such as are approved and recommended by the Bureau are considered. These include the value of erection of barricades during mine fires and explosions; the use of the self-rescuer and the All-Service gas mask, and finally, all types of self-contained oxygen breathing apparatus. Much time is devoted in classroom work to the proper method of constructing stoppings used in restoring ventilation after explosions and the types of stoppings used for fire seals.

In addition to the lectures and demonstrations for the detection of mine gases and the protection against these gases, classes are taught the different methods of mine air sampling, such as the vacuum tube, water displacement, and aspirating bulb methods; how to take samples from behind seals in fire areas, and, finally, the analysis of mine air.

About one full day is devoted to instructions on the surface organization plan for explosions and fires and methods of procedure for mine rescue crews. It takes approximately five full days or 35 to 40 hr. to complete the course as outlined, three days being devoted to classroom work, and the remaining two days to underground maneuvers. In the underground work the men are given a thorough drilling on how to proceed in case of fire or explosion, and the problems encountered during the progress of recovery operations.

In the outline for the course the following procedure during recovery operations after an explosion is taught:

(A) Signaling (Life Line)—Advance, 2 jerks; Retreat, 3 jerks, and Distress, 4 jerks.

(B) Instructions to apparatus crews before entering mine.

(1) Cut off electric power underground, including telephone and signal wires.

- (2) Post man at fan to keep fan in operation.
- (3) Establish checking in and out system.
- (4) Search everyone going underground for smoking articles and matches. Make no exceptions.
- (5) Examine all safety lamps going underground—Who should carry flame safety lamps.

(6) Obtain map of mine showing ventilation.

(7) Establish headquarters for rescue crews. Make smoke room test for air tightness and functioning of apparatus. If no smoke room is available crew should proceed about 50 ft. past fresh air and stop for a few minutes to ascertain safety of apparatus.

(8) Captains of rescue crews take orders only from one in authority as to work and distance of travel. Competent man should be in charge who is familiar with recovery operations.

(9) Examination and checking up of equipment to be carried, such as safety lamp, canary bird, CO detectors, "self-rescuers," chalk, writing pad and pencil, life line, wrenches, nails and screw drivers.

(C) Instructions to rescue crews after entering mine—(Exploration trips should not be undertaken under the following conditions.)

(1) In dense smoke, except with life line and then only to save life, to turn valves, or to open or shut doors essential to recovery operations.

(2) When an explosion from dangerous gas is probable.

(3) When crawling on hands and knees is necessary because of low roof, slate falls or other obstructions.

(4) When necessary to wade in water more than knee deep.

(5) In dangerously high temperature with high humidity.

(6) With less than a full crew of five men.

(7) With apparatus inadequately charged or in unsafe condition.

(8) Unless there is a reserve crew fully equipped at fresh air base except for very short trips.

(D) As soon as the fan has been placed in operation (if out of commission) a fresh air base should be established and telephone communication established to the outside.

(1) Before leaving fresh air base captain of advance crew should be sure that reserve crew is at fresh air base.

(2) Before starting exploration the captain should make sure that each member of the crew has an adequate supply of oxygen for the work which is to be done.

(3) After leaving fresh-air base, crew should proceed carefully in single file with a 6-ft. interval between members of the crew. They should examine roof and roadway, mark with chalk the direction of travel with arrows pointing to fresh-air base, mark the farthest extent of the exploration trip, carefully observe conditions and report to the man in charge upon return to the fresh-air base. All doors should be left as found and not opened any longer than necessary until trip and observations have been made.

(4) Where possible, it is always advisable to make short trips ahead of fresh air—the distance of one or two break-throughs—rather than long and dangerous explorations. Experience has shown that more can be accomplished and the work carried on safer by this method, than by trips far in advance of fresh air.

(5) With crew in proper physical condition and a reserve crew wearing apparatus at the fresh-air base, explorations in flat seams, not to exceed 1,000 ft. (2,000 ft. round trip) in irrespirable gases may be made if necessary, provided conditions are favorable. By favorable conditions are meant a nearly level, unobstructed course, height 5 ft. or more, good roof, air clear, or so nearly clear that vision of the crew is not materially obscured.

(6) For pitching seams (by pitching seam is meant any seam that dips or rises more than 1 ft. in 10 ft.) The maximum distance of 1,000 ft. recommended for flat seams should be reduced proportionally as the pitch increases. Explorations in advance of fresh air should never be undertaken on pitches in excess of 30 deg. unless there is reasonable assurance of saving life. In any event apparatus wearers should take into consideration the difficulties encountered on steep and comparatively steep pitches, such as insecure footing, falls and other obstructions, and be reasonably certain of their ability to return to fresh air unaided.

## Viewpoints of Our Readers

### Mr. Reynders Didn't Say Coal Mining Is Safe

On page 200 of the issue of Feb. 4, 1926, Robert Emery criticizes the remarks of J. V. W. Reynders, president of the American Institute of Mining and Metallurgical Engineers, quoted in the issue of Dec. 10, on the ground that Mr. Reynders did not prove the point that he was trying to make. Perhaps this criticism would be valid if Mr. Reynders had been attempting to make the point which Mr. Emery ascribes to him. I listened carefully to Mr. Reynders' address and also read carefully the official version of it printed in "Mining and Metallurgy," and I am sure that Mr. Emery is mistaken in supposing that Mr. Reynders was trying to prove that coal mining is a safe occupation.

Those who heard Mr. Reynders' address realized quite clearly that Mr. Reynders was referring to the extraordinary emphasis that is attached to the number of deaths that occur in coal mining from coal mine explosions. Mr. Reynders made a comparison between coal mine fatalities and traffic fatalities, but he might equally well have used the number of people who were overcome by carbon monoxide poisoning resulting from the use of illuminating gas. In a city of half a million population there were twenty-six deaths from accidental poisoning due to illuminating gas in the past year.

Another way of putting it would be that the general public gives the coal mining industry no credit for the large amount of intelligent and well directed work it has done towards trying to decrease the loss of life in connection with the mining of coal. As a matter of fact, coal is produced in this country not only with the least human suffering per million tons produced of any country in the world, but also with the least amount of human effort.

The inaccurate thinking that most people do in this regard is illustrated by Mr. Emery's use of the fatality rate for the men engaged in coal mining, applying it against the total population of one hundred and ten million. It must be evident that a

considerable percentage of the whole one hundred and ten million are small children and old people who are relatively free from exposure to accident hazards. The last census of occupations indicates that only about 40 per cent of the total population of the United States are "gainfully employed."

Even if comparisons are restricted to persons engaged in industry, it is rather absurd to attempt to prove that coal mining is as safe as any other form of occupation, because a moment's reflection will reveal that it is not. A good example is the difference between the occupations of picking strawberries and picking cherries. It is perfectly obvious that a strawberry picker can not possibly fall and hurt himself, whereas a cherry picker (who has to climb a tree) has a good deal of hazard of such an accident. The relative safety of strawberry picking and the relative danger of cherry picking has nothing whatever to do with the persons engaged in those industries, because the hazards are not of their making but are inherent in the occupation itself.

About half of the deaths in coal mining result from falls of roof and coal. Coal can not be broken down and brought to the surface without its falling. The workers engaged in taking it out try not to be under it when it falls but they do not always succeed and accidents result. To attempt to prove that coal mining, where the worker is always dealing with falling material, has as little inherent hazard to the worker as occupations where no falling material is dealt with is an absurdity which I am sure Mr. Reynders would not attempt.

I am glad, however, to be able to agree with Mr. Emery as to the utterly unnecessary hazard incurred by the use of open lights in coal mines. Every effort should be made to prevent gas and explosive dust from accumulating in coal mines, but when accidental accumulations occur they are still powerless to do harm unless a flame or a spark sets them off. If there were any real necessity for the continued use of open lights in coal mines there might be some

excuse, however slight, for incurring the hazard of an explosion, but under modern conditions there is no valid reason for the continued use of open light, and any operator who permits an open flame to be used in a bituminous coal mine is incurring a hazard not only to the life of his workers but also of property damage that is entirely unwarranted.

Even when great care is taken to operate a coal mine safely accidents will sometimes occur, as in the case of the Orient No. 2, where a man who knew he was in the presence of explosive gas, and presumably knew the chance he was taking took his safety lamp apart and tried to light it with a match. If all bituminous coal mines were rock dusted, as this one was, large numbers of lives would be saved, as in that instance. It is to be hoped that some time in the near future someone will invent a reliable methane indicator that is convenient to use and will permit the keeping of all flames of every character out of bituminous mines, through doing away with the "safety" lamp. THOMAS T. READ,

Director of Safety Service,  
U. S. Bureau of Mines  
Washington, D. C.

### Bad Light Causes Loss of 108,000 Years

I have just noted on page 724 of the Nov. 26 issue of *Coal Age* an editorial referring to light and safety. In this editorial I am quoted as being responsible for the statement that 108,000 serious accidents yearly are the result of inadequate illumination.

I am afraid the writer of the editorial has confused some of my statements. You will recall the so-called heatless Mondays during the war, and how every effort was made to conserve our coal supply. Among other things was a demand for the curtailment of illumination generally.

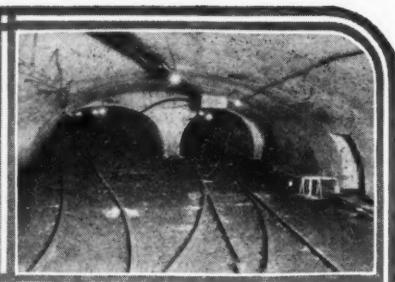
I made an investigation at the time and found that inadequate illumination caused about 18 per cent of our industrial accidents, and the time lost due to these accidents was equivalent to an army of 108,000 men remaining idle for a whole year. The actual number of accidents, however, greatly exceeds 108,000. R. E. SIMPSON,

Engineer.

Travelers Insurance Co.,  
Hartford, Conn.



## Underground Operation



### Builds Arch to Ventilate High Roof Fall

In many mines the roof has an extremely inconvenient way of caving, sometimes to great heights. This tendency is aggravated greatly if any slips or horsebacks are present in the roof strata. Whenever such caves reach upward to any overlying coal beds, there is the additional danger of outbursts of gas in the caved area. These must be guarded against, if possible.

In the coalfields of eastern Kentucky such conditions as have been outlined are frequently encountered, and it becomes necessary to forestall by all means possible the accumulation of dangerous quantities of gas near the roof. In one mine in that region roof falls were so heavy locally and the quality of the roof strata was so uncertain that it became necessary to build a heavy concrete arch over one of the main headings for a distance of several hundred feet. This was put in section by section each segment being about 20 ft. long. After each section was completed and had time to set the roof was shot down in small pieces to form a kind of cushion above the arch to receive the impact of future falls should any occur.

Natural caving together with the shooting of the roof as just mentioned carries the fall up through a small coal bed located several feet above the main seam. In order to guard effectively against the possibility of the emission of gas from this upper bed to form a dangerous mixture with the mine air it has been decided that the passage above

the arch must be ventilated as well as that below it. To this end a split of air will be taken off the current carried in the haulway. This will be circulated above the arch and returned to the main current after sweeping the roof above the fall and the material overlying the arch which in effect is really a gob area.

How this is to be accomplished may be seen in the accompanying sketch. If sufficient air will not traverse the fall as a simple shunt from the main current, it will be an easy matter to install, in the roadway below the concrete arch, a light curtain or half curtain near the forward end of the fall and thus force the air to take this course. In any case ventilating the top of the fall will sweep out any gas that might otherwise accumulate there and thus render it harmless.

### Insulated Draft Chain Protects Mules

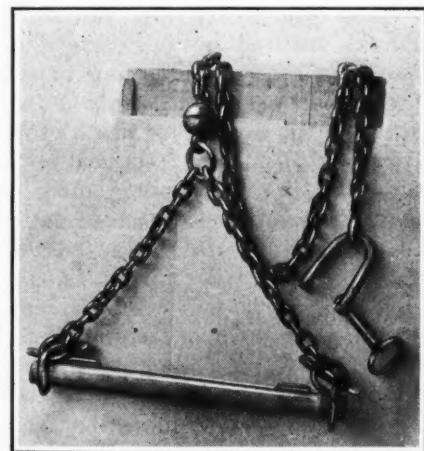
Although gathering locomotives have been widely adopted during recent years there are places in almost every mine that can be more economically served by mules than by these machines. It is probable, therefore, that mechanical or electrical haulage will never entirely supplant the "Missouri straw burner" in American coal operations.

Using mules in electrified mines should entail protecting them from shock that they may receive by way of the draft chain. The accompanying illustration shows a spreader

and insulated draft chain or a tail chain and butt stick. In this outfit the mule is protected from shock reaching him from the cars by a strain insulator that is welded into and forms a part of the draft chain.

The draft chain proper is made of  $\frac{3}{8}$ -in. iron and is 5 ft. long from clevis pin to insulator. Into the opposite eye of the insulator is welded a ring of  $\frac{1}{2}$ -in. iron  $2\frac{1}{4}$  in. in diameter. From this ring extend two  $\frac{3}{8}$ -in. chains 21 in. long that terminate in toggles or tees  $5\frac{1}{2}$  in. long made of  $\frac{3}{8}$ -in. iron which hitch to the butt stick or spreader.

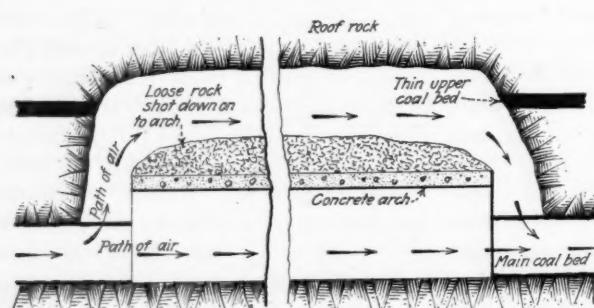
The butt stick is of hickory 26 in. long. Upon either end are 2-in. fer-



### Hickory Spreader and Insulated Chain

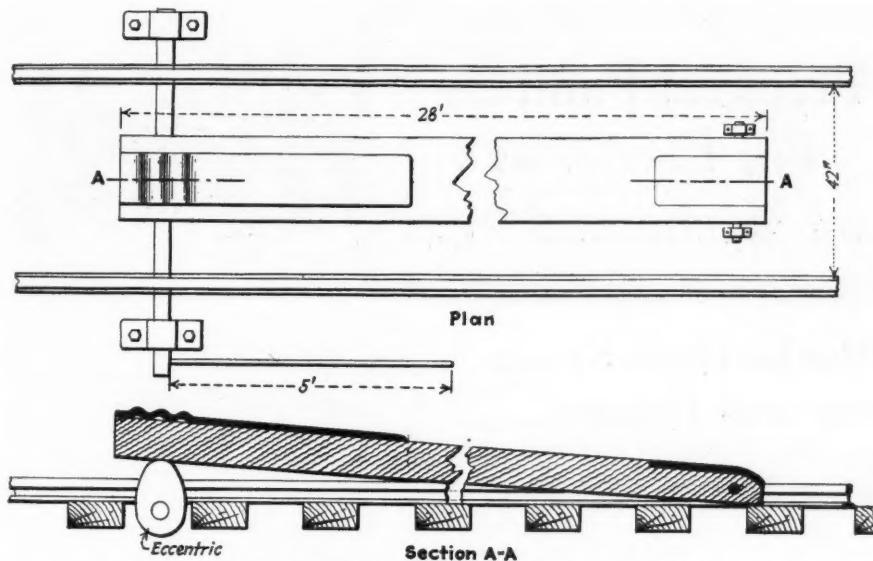
A wooden spreader will not gall a mule as will one made of steel. Furthermore the strain insulator that is welded into and forms a part of the draft chain effectively protects the mule from shock coming from the car or cars hauled.

rules made from  $1\frac{1}{2}$ -in. pipe. Embracing each of these ferrules and riveted to them is a link into which the tugs or trace chains are hooked. On their opposite ends these links each carry a  $\frac{1}{2}$ -in. iron ring  $2\frac{1}{4}$  in. in diameter for the reception of the toggles already mentioned. A short distance from the end ferrules the spreader is provided at each end with a brass staple  $\frac{3}{8}$  in. high and  $2\frac{1}{4}$  in. long in the clear through which suspension straps from the rump spider pass. This device performs a double safety function of much importance. It provides a wooden buttstick that



### Air Has Full Sweep

Leaving an opening between the end of the arch and the roof permits the air current to clear the space above which is practically a gob area. Any gas coming from the roof or upper coal bed is thus effectively diluted and carried away.



This Device Stops Cars at Head of Slope

At the Frontier, or No. 1 Mine, of the Kemmerer Coal Co., in Wyoming, the cars, after being raised up a slope, have to be dropped back to the tipple, the seam of coal inconveniently outcropping in the hillside and dipping at a steeper angle than the slope of the hill. In order to prevent the cars from running loose before being coupled to the rope, an axle scrubber or rubber is placed between the tracks which can be raised or lowered at one end by the action of an eccentric. As the scrubber sometimes failed to achieve its purpose and let the cars go by, the steel rubbing surface was corrugated at the high end and this was found absolutely efficacious in all cases.

will not gall or irritate the mule's legs, and as the chain is insulated it obviates all danger of shock from the cars.

### Curtains Versus Doors in Mine Ventilation

The mine door is an ancient institution. It has been employed in the control of mine ventilation for many generations and consequently has behind it as justification for its use the experience of centuries. Nevertheless, this time-honored device has, and always has had, the shortcoming that it may sometimes be left open. Under such circumstances it becomes inoperative and the air that it is supposed to control may be short circuited with disastrous results. Much trouble, danger and even loss of life has been traced to this cause.

Another device for controlling air currents within the mine, one which cannot be left open but which is usually considered as being too light to be depended upon implicitly, is the curtain. An added objection to the curtain as ordinarily constructed is the fact that it may leak air especially along its lower edge. Furthermore, it is subject to rapid wear inasmuch as it comes in contact with and drags over trips as they pass through it.

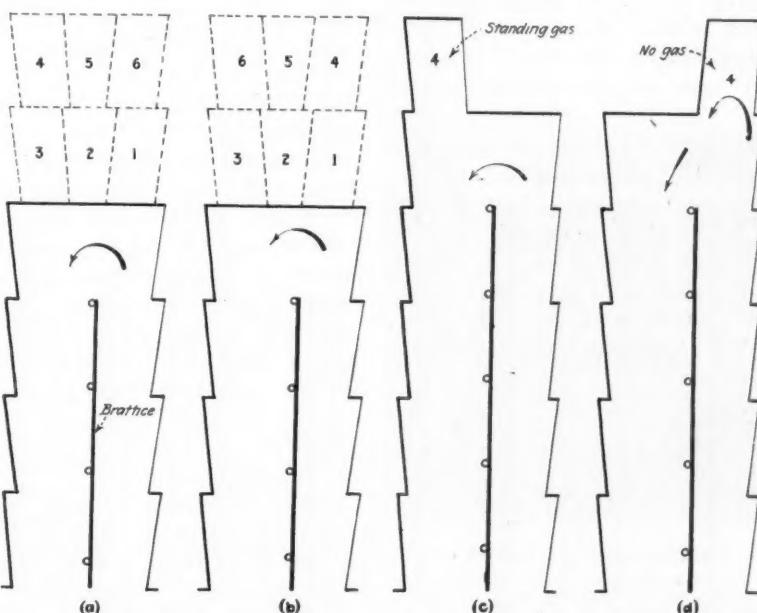
Obviously wear upon a curtain cannot be eliminated. Leakage of air either along the bottom or sides may be stopped by making the curtain large enough to somewhat more than fill the opening in which it is hung.

fined almost exclusively to the outer thickness of canvas upon either side. Only these outer sheets require frequent renewal.

On the other hand as it is impossible to leave curtains open, their use assures that the air will at all times be properly coursed and that there is no possibility of the ventilation current being short circuited. Dangerous accumulations of gas are thus obviated.

### Ventilation with Mechanical Entry Drivers

With entry drivers that remove the coal at the face in a series of lifts such as are shown in the drawing as 1, 2 and 3, also 4, 5 and 6, the order of operation of the machine has great importance. The natural tendency is to cut section 1, follow by section 2 and 3 and then, without moving the machine sideways, to cut a section 4, as in (a). However, if the entry generates gas it is better to move the machine over and cut section 4 back of section 1 as shown in (b) and the reason for this can be seen in (c) and (d). In (c) sections 1-4 have been cut but section 4 is a pocket into which the air cannot be directed. In (d), sections of the same numbers have been cut, but as section 4 is close to the ventilating brattice cloth the air can be directed into it thus driving out the gas. When sections 5 and 6 are started in turn the same draft of air keeps them free of gas and ready for safe operation.

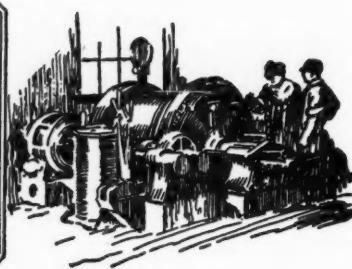


Way to Ventilate for Machines that Cut Entries by Sections

(a) Sequence that reduces machine moves; (b) Sequence that gives best ventilation conditions; (c) Condition when mining section 4 in sequence (a), and (d) Condition when mining same section in sequence (b).



## Practical Pointers For Electrical And Mechanical Men



### "Squeezer" Made of Planks Does Sprag Duty Reducing Wear and Danger

Of the various ways of retarding mine cars as they approach the dump, the "squeezer" method is one that is little used yet has certain marked advantages over spragging, which is so common at mines not equipped with positive car hauls or retarders. Spragging is not a safe practice. It requires considerable physical labor, and does not afford the certainty and nicety of control that is desirable.

The car squeezer used by the Gatlift Coal Co., at Gatlift, Ky., is shown in the accompanying illustration. Essentially, the device consists of two heavy timbers which parallel the track and rub against the hub caps of the car wheels. At the end where the cars enter, the timbers are spaced a distance slightly more than the car width, and are pivoted so that the opposite ends can be moved in and out to squeeze or release the car.

The timbers are lined with renewable wearing strips of 2x6-in. oak. Movement of the timbers for squeezing the cars is effected by pushing down on a long lever mounted beside the track. Control of the cars is positive, is accom-

plished with little physical effort, and with no danger to the operative.

Possible objections to the method are wear on the hub caps and strain on the axle and its mountings. Experience at Gatlift, however, is that the wear on hubs is very slight and that only a very weak car can be damaged by the squeezer.

### Safe Practice in Connecting Interpoles of Motors

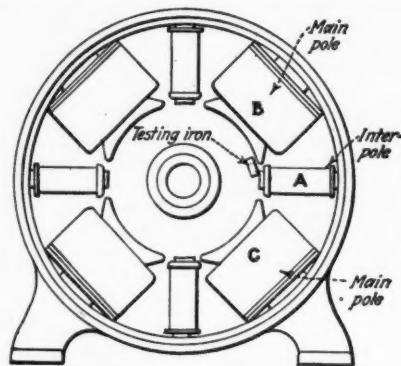
Interpole motors have been in use for a number of years and most maintenance men understand what the interpole is for but some are very much puzzled about the polarity of the interpole in relation to the direction in which the armature rotates. The proper polarity of the interpole and the rotation of the armature in relation to the interpole can be found in the following manner:

In assembling a compound interpole motor, put the field coils in place and connect them in the proper manner so that adjacent poles have opposite polarity, then connect the interpole coils in like manner. After this has been done, connect two adjacent brush holders or brush holder supports together. This is to complete the series and interpole circuit. Next make the connections outside the frame, as for series operation.

Now connect, in series with this circuit, a resistance that will give a fairly strong field in the interpoles and also in the main poles. Next take a short piece of soft steel and try for polarity of interpoles in relation to the main poles and the rotation of the armature, as shown in the accompanying sketch.

Hold the piece of soft steel in front of *A* and *B*, then in front of *A* and *C*. If there is more attraction between *A* and *B* than there is between *A* and *C* then the armature must rotate from *A* to *B*. Mark this on the field frame and put the arma-

ture in place and try out as a series motor. If the armature revolves in the opposite direction from that indicated by the test, interchange the lead on the brush holder studs or



#### Determining Proper Polarity

The direction of rotation will become evident by the use of the piece of soft steel. If there is greater attraction between *A* and *B* than between *A* and *C*, the armature must rotate from *A* to *B*.

supports from the outside of the field frame to the brush holder and the one from the interpole to the brush holder. This will give the proper rotation in relation to the interpole. Next connect the shunt field to correspond to this rotation.

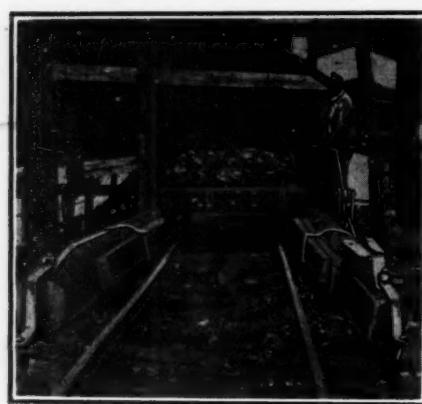
Rimersburg, Pa. J. A. SHAW.

### Tractor Deters Strip Pit

Stripping coal frequently involves problems in drainage. The accompanying illustration shows how the Hawley-McIssac Coal Co., operating mines at Nebo and Centertown, Ky., deters its surface pits. This company some time ago purchased a tractor for each of these mines. Both were fitted with caterpillars.

Above the gas tank of each machine was mounted a centrifugal pump, weighing 450 lb. and capable of handling 500 gal. of water per minute. These pumps are chain driven from the main power shaft. The tractors are driven into the strip pit proceeding out into the water sometimes to hub depth. The pump is here connected and the machine started in operation.

In this condition these machines operate over long periods of time,



Car Squeezer at Gatlift

Forward movement of the loaded trip, which descends by gravity from the mine yard to the tipple, is controlled by the squeezer. The man at the right is holding the operating lever. Braking is effected by pinching the renewable wearing strips of the two heavy timbers against the wheel hubs.

practically without any attention except periodic inspection, refueling, and replenishment of lubricant. Although this type of work is hard on the machines they have withstood it well. The unit at the Centertown mine is now over 18 months old, and



On the Job in a Strip Mine

This shows one of the tractors in the strip pit and gives a good idea of the conditions under which the machine must operate. In this instance, however, the tractor is merely standing idle, neither the suction nor discharge lines being connected. The photograph, nevertheless, gives a good idea of the exacting service to which this machine is put.

has required no replacement of parts. The one at Nebo is only about 8 months old, but has withstood successfully severe daily service.

### Starting Batteries Need Special Attention

Quick and certain starting of most gasoline engines which are used for mine fan standby service depends upon a small storage battery. This battery in turn depends upon operation of the engine for charging current, as does the battery of an automobile.

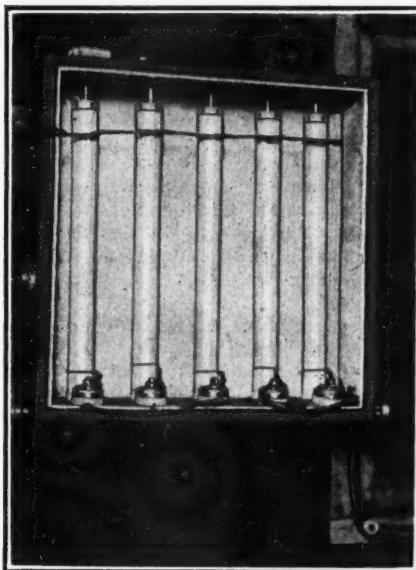
As a rule, however, a standby unit is not operated enough to keep the battery charged. It may be the practice to start the engine once a day or once a week in order to make certain that it is in working condition, but it would be an expensive proposition to operate it long enough each time to maintain a proper state of charge in the battery.

It is important, therefore, to provide a convenient means of charging the battery from an outside power source. Where low-voltage alternating current is available, a rectifier will suffice. Where the direct-current mine circuit is available, charg-

ing may be done through suitable resistance units.

An example of the latter method is illustrated in the accompanying photograph of the resistance units which are used to charge the battery of the standby fan engine at the Dehue (W. Va.) mine of the Youngstown Sheet & Tube Co. Five 275-ohm resistors in parallel are connected in series with the battery across the 275-volt line. This allows a maximum charging current of approximately 5 amp.

Referring again to generalities, it is not enough to arrange for convenient charging. In addition, some regular schedule of testing the gravity and of charging when neces-



Starting Assurance for Fan Engine

This group of resistors is mounted on the wall beside a 127-hp, 1,200-r.p.m. gasoline engine which is a standby for fan drive. The engine-starting battery can be placed on charge from the direct-current mine circuit by closing a snap switch.

sary should be followed. Only in this way will there be a certainty that the battery will always be charged ready for use.

### Rerailing Jack Saves Fingers of Its Users

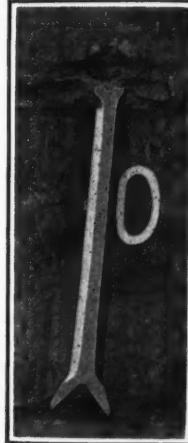
Derailments are all too common accidents in most coal mines. In fact there is scarcely a mine of any size but what has one or more cars off the track every day. Getting such cars back on the rails is sometimes a hard job, especially if the headroom is scant.

One favorite method of rerailing a car is by the use of a fishplate or splice bar. This is used as a prop or slanting jack onto which the car is pushed by the locomotive. One end of the fishplate is placed against

the bumper or drawbar and the other against a tie in such a way that the force of the motor will lift and slew the car into place. When so used, splice bars have an unfortunate way of slipping with the result that the fingers of the hand holding the bar are liable to suffer. In fact many fingers have been entirely lost to their rightful owners in this manner.

In order to overcome this difficulty and render the replacement of cars on the track a fairly safe operation the rerailing jack shown in the accompanying illustration has been devised and is being used at the Lynch (Ky.) mines of the U. S. Coal & Coke Co. This consists of a 14-in. steel bar, 18½ in. long over all, provided on the side with a suitable handhold. At one end this bar is split, the two halves being flared out to form a crotch that will fit over and firmly grip a tie. The other end is slightly upset, two grooves being forged into it at right angles to each other so as to make it easy to grip the bumper or drawbar of a car, without danger of slippage. The surface of this end is also nicked transversely with a chisel to give the effect of knurling, and assure a firmer grip.

In use this jack is handled exactly the same as the splice bar. The forked end is set firmly astride a



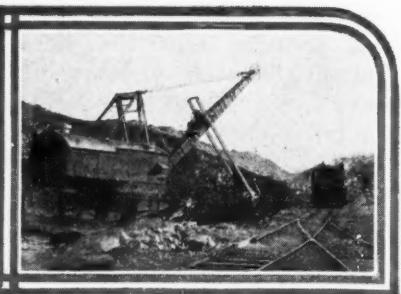
Finger-Saver

This little forging is carried on every locomotive in the Lynch mines of the U. S. Coal & Coke Co. It is vastly more efficient and safer in use than a fishplate or splicebar when used as a rerailer. A car slipping on a splicebar while being pushed to place by a locomotive had a great way of snapping off fingers. This jack gets a good hold on both car and tie and no fingers have been lost since its adoption.

track tie and the opposite end against the bumper or drawbar of the derailed car. The jack is given an inclination sidewise that will slew the car toward the track. When the locomotive pushes the car against it when so set the car is lifted and at the same time pushed sidewise against and upon the rails. Only one hand is required to place and hold the jack and even it is protected largely by the handhold. As soon as the jack is held between the car and tie the hand is withdrawn.



## News Of the Industry



### Victory of Public in Coal Strike Causes Chagrin to Some Senators Who Voted for Copeland Resolution

By Paul Wooton

Washington Correspondent of *Coal Age*

The prevailing impression in congressional and administration circles is that the public won the coal strike. It is a matter of no little chagrin to some of the Senators who voted for the Copeland resolution that they should have aided in an act calculated to snatch victory away from the public just three days before settlement was reached within the industry itself.

It is apparent to the legislators that the public has learned what to do in the event of a future strike. It has had a practical demonstration that self-protection is a much more effective defense than is political intervention. It has learned a lesson in self-reliance and, as a result, is imbued with a new-born confidence. The net result probably will be that this is the last great anthracite strike in which the present generation of miners will participate.

As to the belligerents themselves, the victory lies clearly with the operators, in that they stopped every offensive launched by the mine workers. The miners had become so accustomed to the squeezing of some concession out of every new wage contract that they are surprised and dazed that they did not get some substantial advantage out of this one. After expending all their strength throughout a five and one-half months' strike and after having brought to bear all of the political influence they possess they got nothing.

The old scale is continued provisionally for five years but the machinery for making the changes provided in the agreement is nothing more than an elaboration of the present method of negotiating by consent. Only on paper is it arbitration.

This conclusion is borne out by an analysis of the steps to be taken if the wage scale is to be changed. Every year either party is free to propose a change, to be considered at a joint conference in the familiar way. If the joint conference deadlocks, both sides promise that the differences are to be referred to a board. Both sides are pledged to abide by the decision. This sounds like arbitration, but the method of appointing the board is the joker in the agreement. One of the members is to be selected from a panel of three named by the miners. The other member is to be selected from a panel of three named by the operators.

The two members may select a third, but, in effect, only with the consent of their respective principals. If, therefore, the board of two deadlocks, neither representative is likely to consent to the election of a third member, who would cast the deciding vote. This probably means that no agreement will be reached during the life of the contract that would either lower or raise wages. The chances all are that the existing wage scale is pegged for five years.

As to the check-off feature mentioned by the Secretary of Labor in his announcement of the settlement, one fails to find it in the text of the agreement. The agreement does say that the question of co-operation and efficiency, which, of course, might include the check-off, is to be referred to the Board of Conciliation. This is another polite way of providing for no action. The board can function only by unanimous consent. An important feature of the agreement is its face-saving element. Concessions of a phraseological character are made to both operators and miners without change in fact.

#### Strike Costly to Both Sides

While there may be no change in the actual relationships of the two sides, there certainly has been a change of attitude. Each party to this dispute apparently realizes that the strike has established the precedent that the participants themselves must settle their own quarrels. Each side has been reminded again of the hopelessness of bringing about changes by force. Each side has been penalized heavily. As in wars between nations, the cost has proved to be the most forceful deterrent. It will require the sweat of years, figuratively and literally, to meet the financial aftermath.

Three figures stand out with particular prominence in having made it possible to prevent a political settlement of this economic dispute. It was Secretary Hoover who determined the administration's policy. It was the President who took the political responsibility and who adhered courageously to the hands-off policy, even in the face of a Senate resolution. It was John Hays Hammond who suggested and launched the highly successful campaign for the use of substitutes.

### Kentucky Power and Mining Companies in Merger

Merger of seven large mining operations at Nortonville, Ky., with Monro B. Lanier, of the Monro-Warrior Coal & Coke Co., Birmingham, Ala., as president of the new corporation, the Norton Coal Mining Co., was announced late last week. The companies included in the merger, all of which are located near Nortonville, are the Norton Coal Co., Sunlight Collieries Co., Illsley Mining Co., Sunlight Mining Co., Magic Collieries Co., Empire Coal Mining Co. and Western Collieries Co.

It is stated that the combined companies have 10,065 acres of land, 6,200 acres of which is owned outright and the balance controlled under leases, with developed mines having a capacity of 1,000,000 tons annually, about one-half of which is obtained from striping operations. The Norton Coal Mining Co. is expending some \$700,000 in major improvements at its properties, including among other things a large electrically operated shovel for its striping operations at Illsley.

The Kentucky Electric Power Corporation has been organized by the same interests and has taken over the power plant of the Norton Coal Co. and contract has been made with the J. G. White Engineering Corporation, of New York for major additions to the plant, which will supply power for all the mining operations and for general industrial and domestic use in the section where located. A holding company has been formed for both the mining and power properties known as the Kentucky Consolidated Power & Utilities Co., the controlling interest in which is held by the Monro-Warrior Coal & Coke Co., Birmingham, which will act as general sales agent for the output of the mines, with branch offices in Nortonville, Ky., and Chicago, Ill. The Norton Coal Mining Co. has issued \$1,000,000 in bonds and the power company \$1,500,000, funding all indebtedness.

Officers of the Norton Coal Mining Co. are Monro B. Lanier, president; Sterling S. Lanier, Jr., Nortonville, Ky., first vice-president and general manager; R. L. Schlotman, Nortonville, secretary; John T. Edmunds, Hopkinsville, treasurer; H. B. Robinson, Birmingham, assistant treasurer; T. F. Ellard, Birmingham, assistant secretary; R. D. Lanier, Birmingham, vice-president in charge of sales; J. G. Gaither, Hopkinsville, vice-president. Monro B. Lanier also is chairman of the board of the Kentucky Electric Power Corporation. The Monro-Warrior Coal & Coke Co. has extensive mining operations at Nauvoo, Walker County, Ala.

## Committee Votes Against Confirming Woodlock

Efforts of President Coolidge to have the Senate confirm his recess appointment of Thomas F. Woodlock, of New York, as a member of the Interstate Commerce Commission, received another and unexpected setback Feb. 19 when the Senate Interstate Commerce Committee voted unfavorably, 7 to 6. An unofficial poll some time ago had shown a margin of one for a favorable report. The nomination now goes back to the Senate, which failed to act upon it when it was first presented at the last session of Congress.

When Mr. Woodlock's nomination first was presented to the Senate a year ago there was sharp opposition from Senators from the South who wanted their section represented on the commission. When the nomination was returned to the Senate at this session it was accompanied by that of Richard V. Taylor, of Alabama, who was appointed to succeed C. C. McChord, resigned. Hearings were held on both nominations and that of Mr. Taylor was promptly confirmed.

Mr. Woodlock was called before the committee and questioned during parts of several days, with Senator Wheeler, Democrat, of Montana, leading the cross-examination largely on the basis of Mr. Woodlock's writings on economic and railroad subjects.

## Commonwealth Fuel Co. Sold For \$3,000,000

With the purchase of the stock of the Commonwealth Fuel Co., of Brooklyn, by Gardiner Pattison, of Pattison & Bowns, of New York, as agent, representatives of well-known families who have been in the coal business in Brooklyn for more than half a century pass out of the retail trade.

Announcement of the purchase of the stock was made last week by Baldwin, Hutchins & Todd, attorneys, of New York, representing the Commonwealth Fuel Co., who stated that the Board of Directors had accepted the offer of Mr. Pattison and that the Brooklyn Trust Co. as transfer agent will soon begin the distribution of the purchase price, said to be in the neighborhood of \$3,000,000, to stockholders of record.

It was reported that the purchase of the Commonwealth company was made in the interests of Rubel Brothers, who control 28 coal and ice plants in Brooklyn and Queens. With the acquisition of the Commonwealth Fuel Co.'s 11 plants, the new concern will control and operate 39 plants in the two boroughs.

Richard Wulff, president of the Commonwealth Fuel Co., will continue to occupy that position under the new concern, the Commonwealth company retaining its old name, at least for the present.

Those who will retire as directors of the Commonwealth Fuel Co. are Frank Day Tuttle, Winthrop M. Tuttle, Rudolph Reimer, Richard Wulff, Walter H. Nelson, J. J. Rathjen, W. R. Taylor, W. T. Benedict and Hiram Todd.

The Tuttle family previous to forming

## Reject Glace Bay Pact Without Check-Off

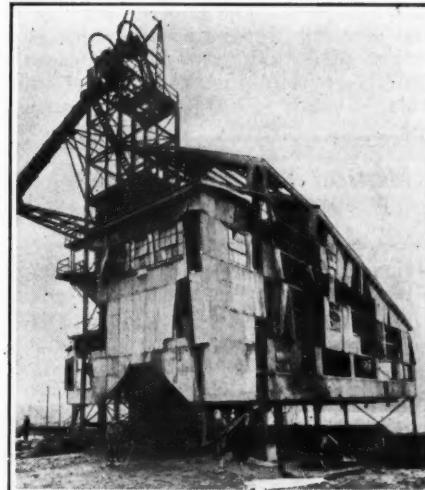
Caledonia local of district 26, United Mine Workers, one of the strongest in the Glace Bay (N. S.) sub-district, at a largely attended meeting Feb. 16, unanimously rejected the two-year wage agreement with the British Empire Steel Corporation. The resolution of rejection was in line with the recommendation of the district officers, saying in part: "That the local union goes on record as being unanimous against any contract which does not carry with it the union check-off."

Caledonia local is the first of the score or more locals of the district to consider the proposed agreement, and, according to District President J. W. McLeod, it received short shrift. Mr. McLeod stated that the executives are preparing a statement for immediate issuance to the locals, in which the officers will advise the membership not to accept the agreement unless the check-off is granted.

ing of the Commonwealth Fuel Co. were retail coal dealers for many years. The family name of Reimer has been identified with the retail coal business since 1875 and the Taylor family since 1850. Mr. Rathjen also has been in the coal business for many years.

## Resume Work at Euclid Mine

The Pittsburgh Coal Co. started work Feb. 23 at Euclid Mine, four miles from West Newton, Pa., this being the eighth mine of the company in the Pittsburgh district to resume operations on the 1917 scale. Fifty-seven men went to work at Euclid mine, making a total of more than 1,700 men working for the company in the district at the 1917 scale.



Wrecked Tipple at Powhatan Mine

One miner was killed and nineteen were injured—one perhaps fatally—in an explosion Feb. 15 at the Powhatan Mine of the Powhatan Mining Co., 16 miles south of Bellaire, Ohio. Six hundred other miners escaped from the mine without injury.

## John A. Bell Properties Sold at Auction

John A. Bell, bankrupt coal operator and banker of Carnegie, Pa., who is under sentence for embezzlement, was shorn of his coal property and realty in the lobby of the City-County Building, Pittsburgh, on Feb. 17, as the auctioneer's gavel banged down on bids for heavily-mortgaged lands.

The sale brought forth bids involving land valued at auction at approximately \$275,000, but only about \$16,000 changed hands. Mortgages on the properties amounting to \$241,500 were assumed by the purchasers.

Outstanding in the sale was the auction of the "Potato Garden Run" tract in Findley township, near Imperial, consisting of 562 acres of Pittsburgh coal and 1,114 acres of surface land. Laden with mortgages of \$238,000, the land was knocked down for \$150 and taxes to A. D. Robb, representing the Colonial Trust Co., which already holds a \$175,000 mortgage on the land.

A bid of \$50 and taxes took 45 acres of coal land in West Deer township, which is burdened with a \$3,500 mortgage. The successful bidder was C. C. McDermott, of McKees Rocks.

A tract of 197,434 acres in Smith township, Washington County, was purchased by the Hanover Coal Co. for \$2,700. Coal and surface was included at this low price. John A. Bell bought this land in 1917.

A tract of 167 acres of coal land in Mt. Pleasant township, Washington County, was purchased by Finkel Brothers, of Washington, for \$100. They also bought another tract, which contained about 137 acres, for \$2,000.

Other tracts involving small acreages were sold for a few hundred dollars each.

The Carnegie Coal Co., which was one of John A. Bell's holdings, is worth \$15,348,240, according to the report of the appraisers, John M. Rayburn and James Donaldson, filed in federal court in Pittsburgh. The appraisers were named after suit had been filed to recover on a \$10,000 note by the Harrison National Bank. W. N. Wilshire and C. C. McGregor, receivers, asked for the appointments.

Active and unassigned land is valued at \$13,553,250 and railroads, office equipment and docks are valued at \$1,794,990, the report shows. The company has a capacity of 2,900,000 tons a year, with a recoverable tonnage of 48,000,000 from the remaining active land, the appraisers reported. There is a recoverable tonnage of 142,000,000 from the unassigned lands, the appraisers stated.

## Kills Alberta Union Organizer

Jack Nolan, 35, organizer for the United Mine Workers at Drumheller, Alta., and former boxer, was shot to death Feb. 20 by Constable McKeen, who had arrested him on an assault warrant. Constable McKeen, who is held pending an inquest, said that after he had warned Nolan to desist the latter had made threatening remarks in an argument over bail. The shooting followed.

## D. L. Wing Dead; Was Noted As an Economist

David L. Wing, widely known as an economist, who had specialized in coal for many years, died in Washington Feb. 16, a victim of pneumonia.

Most of Mr. Wing's career had been spent in the government service. Since 1923 he had been engaged in consulting practice, an ambition which he long was prevented from realizing due to the fact that he was drafted by the government to perform first one task and then another.

His first service with the government was in the Census Bureau. Later he was a member of the staff of the Bureau of Corporations. He served with the economic staff of the Federal Trade Commission from 1915 to 1920. He was retained by the Calder commission during its probe of coal. In 1921 he served as a coal specialist with the President's Unemployment Conference. In 1923 he was retained by the Harding Coal Commission to conduct an important part of its work.

During the early days of the Lever act Mr. Wing had to take the real responsibility for fixing coal prices. This was a great responsibility and one which was particularly distasteful to him. He was careful and methodical and never lost an opportunity to point out the inadequacy of the data on which to base conclusions as to coal prices and of the impossibility prescribing a scale of prices that would do justice to all fields.

It is no secret that some of the members of the war-time Federal Trade Commission played politics. Through this period Mr. Wing stood like a rock, insisting that the price determination be made on a basis of fact with adequate margins above cost.

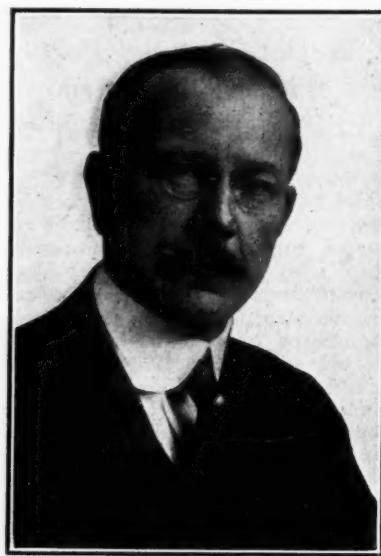
The coal producers probably never have known how much Mr. Wing's courage and integrity saved them by frustrating irresponsible members of the Commission who sought to make political capital out of the disordered market.

Throughout his career Mr. Wing insisted on the necessity for actual data as a basis for opinion or administrative policy. He was a stickler for accuracy, for honest attention to detail and never sacrificed accuracy for interest. If his passion for accuracy at some times led him into a mass of detail it was because of his unwillingness to act without an adequate basis of knowledge.

The seven-volume report on costs which Mr. Wing prepared for the Federal Trade Commission and his equally elaborate studies of cost, investment and profit for the Harding Coal Commission are conceded to be monumental pieces of work. They are the industry's best answer to charges of profiteering. From a scientific standpoint these are the most comprehensive studies of production costs that ever have been made in any American industry.

Mr. Wing was born in Valparaiso, Chile, Dec. 20, 1874. He was graduated from the Massachusetts Institute of Technology in 1898 and later took post-graduate work at Columbia University.

Mr. Wing is survived by his widow, a son and a daughter.



The Late David L. Wing

## Big Muddy Dredging Project To Get Further Study

The U. S. Government has not closed the books on the proposed canalization of the Big Muddy River as a coal transportation outlet for that section of southern Illinois to the Mississippi River. In a letter to Congressman E. E. Denison, of Marion, Ill., Maj. Gen. H. Taylor, chief of the engineers for the War Department, has assured a more extended consideration of the project.

"The board considered certain aspects had not been fully covered, and at its recommendation the report was returned to the district engineer for further study."

In a communication to the board of engineers Congressman Denison suggested that Illinois might pay part of the canal project's cost. Major General Taylor expresses keen interest in this suggestion.

The district engineer's report was unfavorable to the project principally on the basis that the government should first develop the main water arteries before undertaking work on streams entirely within the confines of one state.

## Motion Picture to Portray Rock-Dusting

A two-reel moving picture captioned "The Story of Rock-Dusting," which is to be made and distributed by the U. S. Bureau of Mines, will graphically portray the manner in which this safety method saved 1,055 miners in an explosion Jan. 29 in the New Orient mine of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill. The film will be financed by the Illinois company, according to word received by Scott Turner, Director of the U. S. Mines Bureau, from George B. Harrington, president of the company.

## Dust Code Wins A. E. S. C. Vote; Other Plans Afoot

Standard practice for rock-dusting mines has been recommended to the industry by the American Engineering Standards Committee. The safety code for rock-dusting sponsored by the American Institute of Mining and Metallurgical Engineers has been adopted by a mail vote of 42 affirmative, 1 negative and 1 not voting. The vote by which the proposed mine ventilating code was rejected, as reported previously in *Coal Age*, was 19 to 9. As only 15 votes were necessary to prevent approval, the code was referred to the sponsors for reconsideration by the sectional committee.

The American Mining Congress and the National Safety Council were voted, in the Nov. 11, 1925, conference of the Mine Correlating Committee, joint sponsors for the code, "Fire Fighting Equipment in Metal Mines." Later it developed that the National Fire Protection Association wished a joint sponsorship in this code, and on Jan. 4 the National Safety Council agreed to withdraw in its favor. A letter ballot will be circulated on the advisability of this change.

In regard to the sectional committee on underground transportation, the American Mining Congress has submitted the following recommendation: That the Congress be given 4 votes; manufacturers of special trackwork material, 3 votes; the American Institute of Mining and Metallurgical Engineers, the Electric Power Club, the U. S. Bureau of Mines, consulting engineers, manufacturers of cars and wheels be each given 2 votes, and the American Railway Engineers Association, the American Society of Civil Engineers and the American Electric Railway Association, 1 vote each.

### Consideration Deferred

It has been suggested that the standardization of metal-mine projects be submitted to a separate correlating committee to consist of metal-mine societies and groups. This suggestion will be considered later.

Dr. Lucian W. Chaney, of the Bureau of Labor Statistics, has been appointed the second member of that bureau on the Mine Correlating Committee. G. H. Clevenger will submit a report on standardization of screen sizing tests to his committee and advise the Correlating Committee. The Coal Mining Institute of America will submit a "Classification of Coal Standards" proposed by G. H. Ashley to the Correlating Committee.

O. P. Hood, of the U. S. Bureau of Mines, is preparing a standard code for coal-mine illumination. One on electrical equipment in coal mines which has been prepared is being circulated to the committee to consider this subject.

Secretary Hoover has reached no conclusion as to the merits or demerits of retail price fixing. He points out that business men and economists differ widely on the subject, as do the specialists in his own department.

## Local Strikes Reflect Return to Normalcy in Hard-Coal Fields; See Trouble in Interpreting Pact

Anthracite mining was officially resumed on Feb. 18.

The preliminary formalities to the termination of the longest strike in the history of the hard-coal industry were disposed of without a hitch. The terms of the agreement signed at Philadelphia on Lincoln's birthday were approved by the tri-district convention of the mine workers at Scranton on Feb. 16 by a vote of 698 to 2. The following afternoon the same men who had affixed their signatures to the Philadelphia contract assembled in the office of Major W. W. Inglis, chairman of the anthracite operators' negotiating committee, and signed the formal peace pact.

On the surface all is again serene. Men are trooping back to work, general business in the region is recovering from its long slump and coal once more is moving to the anthracite coal-consuming territory. Normal volume, however, has not yet been reached. Although there were many men who were called back to put the mines into shape prior to last Thursday, there still remains considerable work to be done in some operations. Moreover, many men who deserted the region in the early weeks of the strike have not returned. As if to give patent to the return to "normal conditions," local strikes already have made their reappearance.

The element of danger underlying the surface harmony, as some observers see it, lies in the possibilities of conflict in the interpretation of the contract. From the viewpoint of the average reader of the agreement—a viewpoint shared by the operators—the new agreement provides for arbitration in unmistakable terms. Nevertheless, leaders of the United Mine Workers, in addressing the tri-district convention last week, denied emphatically that the labor organization had been compelled to accept arbitration.

But the union officials went still further and assured their followers that the new contract was broad enough to cover the check-off and intimated that failure upon the part of the operators to agree to act as the collection agency of the United Mine Workers in the anthracite region would be a breach of contract. "Section 4 of the contract," asserted John L. Lewis, president of the union in his address to the convention, "provides for a plan of co-operation in the industry. We have oftentimes pointed out to the anthracite operators that their industry could be improved in many ways and production costs could be lowered through the application of greater efficiency not alone on the part of the men but on the part of the management, and we have made the suggestions from time to time and we have said to them that if they were applied in a genuine way there would not be any necessity for the least profitable of the anthracite collieries to ask a wage reduction, and Heaven above knows there is no necessity for the greater portion of them, and to that

end we presented them upon several occasions with a joint plan of co-operation calling not only for the co-operation of the mine workers but the co-operation of the operators, but they did not like the word 'check-off' as it appeared in the co-operating plan, so we wrote up a plan that did not contain the word 'check-off,' but it is here in Sec. 4, word for word, as we wrote it, but whether it reads 'check-off' or not that is precisely what Sec. 4 means.

"The operators fully understand that what we mean by reciprocal co-operation is co-operation on our part to reduce cost and co-operation on their part by granting the check-off. And they accept and will sign tomorrow this document, which says that the Board of Conciliation, exclusive of the umpire, shall work out a reciprocal program of co-operation efficiency. They shall work it out. It does not say they may work it out. That is a mandatory clause in that contract. That is a mandate just as strong as the English language can state it, and if they do not agree to that clause and work it out, then they are in violation of the contract and they are doing less than their contractual duty—that is the meaning of Sec. 4."

Although it is known that the operators are as firmly opposed to granting the check-off as they were when the strike began, no official reply has been made to Mr. Lewis' contention. This silence, it is understood, is not to be construed as acquiescence in Mr. Lewis' interpretation.

That the union may bring up the check-off before the Board of Conciliation under the terms of the new agreement is freely admitted. But that there has been any understanding, express or implied, that the operator-members of the Board would give such a proposal favorable consideration, however, is an assumption vigorously denied by observers who have been following the situation closely. In view of the importance which both sides attach to the question, it seems hardly tenable, in the opinion of these observers, that the union members of the scale committee were in any doubt as to the operators' attitude before signing the agreement.

### Wage Board Gets to Work On Kansas Machine Scale

A joint wage board, composed of representatives of the Kansas Coal Operators' Association and members of District 14, United Mine Workers, organized Feb. 5, began negotiations Feb. 11 for the establishment of a machine scale in the Kansas field. The move was necessitated by the increase in the number of machines in the Kansas field in the last year.

### Seven Die as Result of Kentucky Mine Blast

An explosion occurred at about 3:30 p.m., Feb. 16, as the day shift was leaving the Nelson Creek Coal Co. mine, six miles from Central City, in the western Kentucky field, caused the instant death of three workers, while four others died from gas, in a rescue effort. Seven others were overcome, of whom three were in a dangerous condition, but all are now expected to recover.

It is thought that the accident was caused by a windy shot a half mile from the shaft.

Rescue work was hampered by impassable roads, doctors with pulmots who came from Central City having to be transferred from motors to wagons. When they reached the mine, the gas supply for the pulmots wasn't sufficient to revive all of those overcome.

By evening gas had been fanned out, and every one accounted for. Cecil Fulkerson, assistant mine manager, was one of the first to go in after the explosion, and was carried out unconscious. J. W. Bastin is general manager of the mine and R. S. Lytle, of Danville, Ky., is president of the company.

### New Anthracite Prices Out

"Company" anthracite prices, announced following the resumption of hard-coal mining last week, range from \$8.25 to \$9.15 on broken coal, \$8.75 to \$9.25 on egg and nut, \$9.25 to \$9.50 on stove and \$6 to \$6.35 on pea. Specific schedules of the various companies are shown in the tabulation following:

	Chest-			
	Broken	Egg	Stove	nut
D. L. & W. ....	\$8.25	\$8.75	\$9.25	\$8.75
Hudson Coal Co. ....	9.00	9.00	9.35	9.00
Phila. & Reading. ....	9.15	9.15	9.40	9.15
Lehigh & Wilkes-				
Barre. ....	8.25	8.75	9.25	8.75
Lehigh Valley. ....	8.50	9.00	9.35	9.00
Lehigh Coal &				
Navigation Co. ....	9.25	9.25	9.50	9.10
M.A. Hanna & Co. ....	9.00	9.25	9.60	9.25

Steam sizes—No. 1 buckwheat, \$3 for all companies listed except Hudson Coal Co., which is \$3.50; No. 2 buckwheat (rice), \$2 for D. L. & W. and Lehigh & Wilkes-Barre coals; \$2.25 for other coals; No. 3 buckwheat (barley), \$1.60 for D. L. & W. and Lehigh & Wilkes-Barre coals, \$1.75 for others. No rice or barley quotations made by Hudson Coal Co., which offers birdseye at \$2.

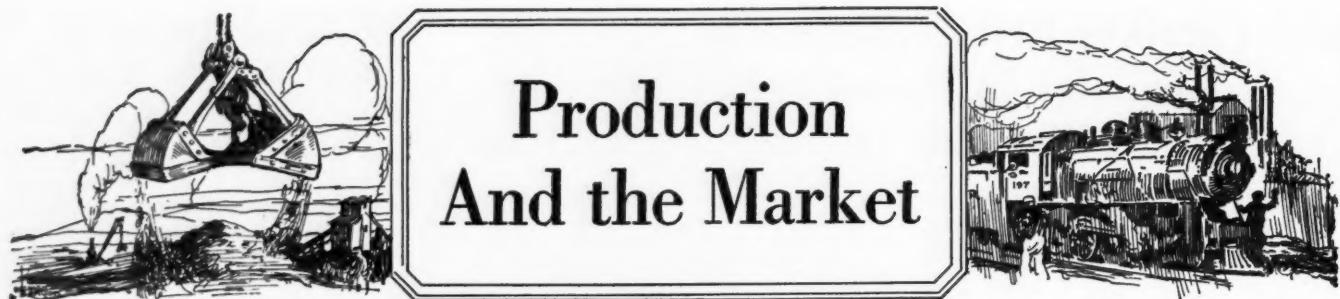
The prices named by the same companies for February, 1925, were as follows:

	Chest-			
	Broken	Egg	Stove	nut
D. L. & W. ....	\$8.00	\$8.75	\$9.00	\$8.75
Hudson Coal Co. ....	8.75	8.75	9.25	9.00
Phila. & Reading. ....	9.15	9.15	9.40	9.40
Lehigh & Wilkes-				
Barre. ....	8.00	8.75	9.00	8.75
Lehigh Valley. ....	8.50	8.80	9.15	9.15
Lehigh Coal &				
Navigation Co. ....	9.25	9.25	9.50	9.25
M.A. Hanna & Co. ....	8.80	9.15	9.85	9.40

Steam sizes—Buckwheat No. 1, \$3 @ \$3.15; rice \$2 @ \$2.25; barley, \$1.50; birdseye, \$1.60. All quotations are f.o.b. mines per gross ton.

### Delay Horning Report

John I. Pratt, Pennsylvania state mine inspector for the Pittsburgh district, says the blame for the explosion in the Horning No. 4 mine of the Pittsburgh Terminal Coal Corporation on Feb. 3, in which twenty lives were lost, will not be placed until his investigation is completed and a report submitted to the Department of Mines at Harrisburg.



## Coal Market Unsettled, Due to Weather Changes And Sudden End of Strike

The bituminous coal markets of the country are still in a state of flux. Producers and distributors are trying to adjust themselves to the conditions created by the sudden termination of the anthracite strike while endeavoring at the same time to accommodate output to the fluctuations due to changing weather conditions and the uncertainties of year-end industrial requirements. This seesawing, as might be expected, has been accompanied by some upsets in prices which have further decreased average realizations at the mines.

The most cheering feature of the situation is that the decline has been more moderate than some of the pessimists predicted. *Coal Age* Index of spot prices on bituminous coal for Feb. 22 was 170 and the corresponding price was \$2.06, as compared with an index number of 173 and a price of \$2.10 on Feb. 15. There were some sharp losses in going prices on prepared sizes in eastern markets, both in the high- and the low-volatile grades, and these losses were reflected back in interior markets. Mine-run, too, was weaker along the Atlantic seaboard. As forecast last week, prices on slack are firmer.

### Operators Trim Production

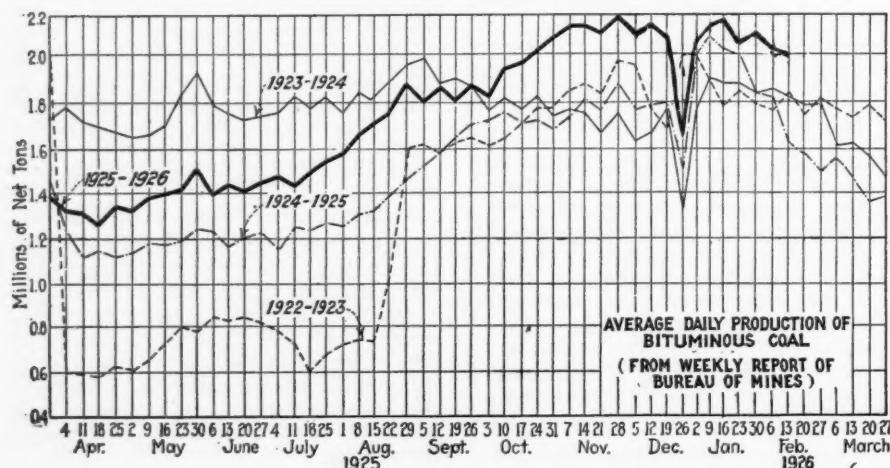
In keeping with the changed conditions operators are effecting a gradual reduction in production. For the second week in the month the output had been pulled down to 12,008,000 net tons. Part of this decrease was credited to the holiday in that week, but loadings on Feb. 15 and 16 gave evidence of the diminished demand for coal. Nevertheless, unless industrial requirements of the country have been grossly underestimated, further curtailment will be necessary before a balance has been struck between supply and demand.

Mining of anthracite was officially resumed last Thursday and some coal reached the New York harbor the next day. It will be some time, however, before there will be any accumulation of reserve stocks. Working forces at the mines have not yet been recruited to full strength, some operations require extra maintenance and repair work to put them into shape and producers are trying to make the present output cover as wide an area as possible. From the retailer's standpoint, this is very desirable, as it will give him a better chance to dispose of his yard supplies and rolling tonnage of other fuels.

### Price Reductions Extremely Unlikely

Price announcements made by the big line companies show schedules on the "normal" winter basis. The first shipments of independent coal received at New York sold all the way up to \$14 and \$15. This basis, of course, cannot be maintained; on Saturday, for example, there were middle houses quoting \$10@\$12. Independent prices after the first rush probably will settle down to levels 50c.@\$1 above company circulars on domestic sizes. Although no official statements have been made, there seems to be little hope that the old line companies will make any spring reduction.

Life has gone out of the Connellsville coke market. For several days last week there was practically no spot buying. New York quotations were on a \$6@\$6.50 basis, with some reports of offers at \$4.50. Spot furnace coke was as low as \$4 and some run-of-oven tonnage in small lots sold at \$4@\$4.25. Inasmuch as recent coke output has been at a rate about 100,000 tons weekly above normal requirements, some drastic readjustments are in order.



### Estimates of Production

	(Net Tons)	
BITUMINOUS	1925	1926
Jan. 30 .....	11,073,000	12,563,000
Feb. 6 (a) .....	10,910,000	12,167,000
Feb. 13 (b) .....	9,758,000	12,008,000
Daily average.....	1,626,000	2,001,000
Coal yr. to date....(c)	415,187,000	472,190,000
Daily av. to date...	1,551,000	1,759,000

ANTHRACITE	1,730,000	34,000
Jan. 30 .....	1,909,000	27,000
Feb. 6 (a) .....	1,824,000	32,000
Feb. 13 .....	75,720,000	40,713,000

BEEHIVE COKE	276,000	367,000
Feb. 6 (a) .....	265,000	357,000
Feb. 13 (b) .....	1,669,000	2,103,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

## Middle West Hails Pessimists

Middle Western coal men are viewing the outlook with jaundiced eye. The retirement of several wholesalers and reports and rumors of pending mine consolidations convince many that the new coal year will be a bad twelve-month for the optimists.

Further comfort for the pessimists is given in the exceedingly dull state of the current market. Shippers say there is a fair movement of Franklin County lump at the \$3 level and a reasonable demand for furnace and egg, but admit that there are hundreds of "no bills" in the southern field. So serious has this situation become that railroads serving the Illinois district are complaining of depleted car supply.

Mines in the southern Illinois district proper are not averaging over three or four days a week. Many are doing less and some are down for the rest of the season. Like conditions prevail in the Duquoin district.

Commercial demand has been cut

sharply in the Mt. Olive field, but railroad fuel requisitions have been somewhat heavier. There, too, "no bills" of all sizes plague. The Standard district still is held down in the same old rut of selling too near cost to be profitable. Only the exceptionally situated mine is working better than three days.

## Eastern Invasion Grows Stronger

Eastern coals are invading the Middle West in increasing volume—and at decreasing prices. The termination of the anthracite strike lopped off about 50c. from the quotations on high-grade eastern coals. Choice eastern Kentucky domestic sizes are to be had at \$2.25@\$2.75; less favorably known 4-in. block is down to \$2.

Conditions in the St. Louis local market are no better than those ruling in Chicago. Mild weather has squeezed down the domestic demand; industrial movement is light. There is some movement of steam coals to the Mis-

souri River, but the tonnage is disappointing. Local domestic demand, limited in quantity, largely ignores the more expensive fuels.

Profiting—for the time being at least—by the bitter experiences of the past few weeks, Kentucky producers are keeping consignment coal out of the Louisville market. As a result of this self-restraint, less is heard of distress sales and the prices on screenings have shown a slight advance. This increase has had a beneficial influence upon other steam grades.

## Kentucky Steam Coal Prices Up

Two weeks ago western Kentucky screenings were quoted at Louisville at 50@\$80c.; the present range is 80@\$90c. Slack from eastern Kentucky, offered ten days ago at 60@\$95c. in the Louisville market and at 40c.@\$1.10 in Cincinnati, is now quoted at 60c.@\$1 in Louisville and 65c.@\$1.10 in Cincinnati. Even wagon-mine western Kentucky mine-run, which sold down to

## Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market	Feb. 23	Feb. 8	Feb. 15	Feb. 22†	Midwest		Market	Feb. 23	Feb. 8	Feb. 15	Feb. 22†
	Quoted		1925	1926	1926	1926		Quoted		1925	1926	1926	1926
Smokeless lump.....	Columbus....	\$3.85	\$4.35	\$4.60	\$4.25@ \$4.60		Franklin, Ill. lump.....	Chicago....	\$3.10	\$3.50	\$3.00	\$3.00	
Smokeless mine run.....	Columbus....	1.90	2.55	2.55	2.40@ 2.65		Franklin, Ill. mine run.....	Chicago....	2.35	2.50	2.50	2.35@ 2.50	
Smokeless screenings.....	Columbus....	1.15	1.85	1.85	1.50@ 1.75		Franklin, Ill. screenings.....	Chicago....	1.85	1.55	1.55	1.40@ 1.75	
Smokeless lump.....	Chicago....	3.60	4.60	4.50	4.00@ 4.25		Central, Ill. lump.....	Chicago....	2.85	2.85	2.60	2.50@ 2.75	
Smokeless mine run.....	Chicago....	1.60	2.35	2.10	2.00@ 2.25		Central, Ill. mine run.....	Chicago....	2.20	2.10	2.10	2.00@ 2.25	
Smokeless lump.....	Cincinnati....	3.75	4.60	4.25	4.25@ 4.50		Central, Ill. screenings.....	Chicago....	1.85	1.10	1.10	1.00@ 1.25	
Smokeless mine run.....	Cincinnati....	1.85	2.50	2.35	2.25@ 2.50		Ind. 4th Vein lump.....	Chicago....	2.85	3.00	2.85	2.75@ 3.00	
Smokeless screenings.....	Cincinnati....	1.35	1.25	1.25	1.25@ 1.50		Ind. 4th Vein mine run.....	Chicago....	2.35	2.30	2.30	2.25@ 2.35	
*Smokeless mine run.....	Boston....	4.45	4.85	5.00	4.75@ 5.00		Ind. 4th Vein screenings.....	Chicago....	1.80	1.70	1.70	1.65@ 1.75	
Clearfield mine run.....	Boston....	1.95	2.05	2.15	1.85@ 2.15		Ind. 5th Vein lump.....	Chicago....	2.50	2.55	2.35	2.00@ 2.35	
Cambria mine run.....	Boston....	2.30	2.35	2.45	2.15@ 2.50		Ind. 5th Vein mine run.....	Chicago....	2.10	1.95	1.95	1.85@ 2.10	
Somerset mine run.....	Boston....	2.10	2.15	2.30	1.95@ 2.25		Ind. 5th Vein screenings.....	Chicago....	1.55	1.10	1.10	1.10@ 1.25	
Pool 1 (Navy Standard)....	New York....	2.70	3.05	3.05	2.85@ 3.25		Mt. Olive lump.....	St. Louis....	2.85	2.85	2.75	2.75	
Pool 1 (Navy Standard)....	Philadelphia....	2.80	3.05	3.20	2.70@ 3.15		Mt. Olive mine run.....	St. Louis....	2.35	2.05	2.15	2.15	
Pool 1 (Navy Standard)....	Baltimore....	2.25	2.30	2.30	2.25@ 2.35		Mt. Olive screenings.....	St. Louis....	1.50	1.75	1.40	1.40	
Pool 9 (Super. Low Vol.)....	New York....	2.05	2.55	2.60	2.40@ 2.75		Standard lump.....	St. Louis....	2.50	2.45	2.50	2.50	
Pool 9 (Super. Low Vol.)....	Philadelphia....	2.20	2.60	2.70	2.30@ 2.60		Standard mine run.....	St. Louis....	1.80	1.80	1.80	1.75@ 1.85	
Pool 9 (Super. Low Vol.)....	Baltimore....	1.85	2.15	2.15	2.10@ 2.25		Standard screenings.....	St. Louis....	1.25	1.05	.80	1.10@ 1.25	
Pool 10 (H.Gr. Low Vol.)....	New York....	1.75	2.25	2.30	2.20@ 2.45		West Ky. block.....	Louisville....	2.25	2.00	2.00	1.85@ 2.15	
Pool 10 (H.Gr. Low Vol.)....	Philadelphia....	1.85	2.35	2.40	2.00@ 2.30		West Ky. mine run.....	Louisville....	1.50	1.30	1.25	1.25@ 1.50	
Pool 10 (H.Gr. Low Vol.)....	Baltimore....	1.70	1.95	1.95	1.90@ 2.00		West Ky. screenings.....	Louisville....	.95	.65	.75	.80@ .90	
Pool 11 (Low Vol.)....	New York....	1.55	2.10	2.10	2.00@ 2.25		West Ky. block.....	Chicago....	2.35	2.35	2.35	1.85@ 2.25	
Pool 11 (Low Vol.)....	Philadelphia....	1.65	2.20	2.25	1.90@ 2.00		West Ky. mine run.....	Chicago....	1.35	1.50	1.50	1.25@ 1.75	
Pool 11 (Low Vol.)....	Baltimore....	1.50	1.70	1.70	1.75@ 1.80								

## High-Volatile, Eastern

Pool 54-64 (Gas and St.)....	New York....	1.50	1.60	1.60	1.50@ 1.70		Big Seam lump.....	Birmingham....	2.85	2.75	2.75	2.25@ 2.50	
Pool 54-64 (Gas and St.)....	Philadelphia....	1.50	1.60	1.65	1.50@ 1.70		Big Seam mine run.....	Birmingham....	1.75	2.00	1.85	1.50@ 2.00	
Pool 54-64 (Gas and St.)....	Baltimore....	1.65	1.65	1.65	1.70@ 1.80		Big Seam (washed).....	Birmingham....	1.75	2.25	2.10	2.00@ 2.25	
Pittsburgh sc'd gas.....	Pittsburgh....	2.50	2.65	2.65	2.60@ 2.75		S. E. Ky. block.....	Chicago....	2.75	2.85	2.60	2.25@ 3.00	
Pittsburgh gas mine run.....	Pittsburgh....	2.20	2.10	2.10	2.00@ 2.25		S. E. Ky. mine run.....	Chicago....	1.50	1.85	1.85	1.75@ 2.00	
Pittsburgh mine run (St.)....	Pittsburgh....	1.95	2.05	2.05	2.00@ 2.10		S. E. Ky. block.....	Louisville....	2.35	2.75	2.75	2.50@ 3.00	
Pittsburgh slack (Gas)....	Pittsburgh....	1.30	1.20	1.20	1.00@ 1.15		S. E. Ky. mine run.....	Louisville....	1.35	1.55	1.55	1.35@ 1.75	
Kanawha lump.....	Columbus....	2.35	2.25	2.25	2.00@ 2.50		S. E. Ky. screenings.....	Louisville....	.80	.55	.75	.60@ 1.00	
Kanawha mine run.....	Columbus....	1.50	1.60	1.55	1.40@ 1.75		S. E. Ky. block.....	Cincinnati....	2.25	3.00	2.50	2.00@ 2.75	
Kanawha screenings.....	Columbus....	.75	.65	.65	.50@ .75		S. E. Ky. mine run.....	Cincinnati....	1.40	1.45	1.35	1.25@ 1.60	
W. Va. lump.....	Cincinnati....	2.15	2.75	2.50	2.00@ 2.50		S. E. Ky. screenings.....	Cincinnati....	.80	.80	.75	.65@ 1.10	
W. Va. gas mine run.....	Cincinnati....	1.35	1.50	1.45	1.40@ 1.60		Kansas lump.....	Kansas City....	4.75	5.00	4.75	4.50	
W. Va. steam mine run.....	Cincinnati....	1.30	1.30	1.25	1.25@ 1.40		Kansas mine run.....	Kansas City....	3.10	3.10	3.10	2.75@ 3.00	
W. Va. screenings.....	Cincinnati....	.75	.80	.75	.75@ 1.00		Kansas screenings.....	Kansas City....	2.50	2.35	2.30	2.35@ 2.50	
Hocking lump.....	Columbus....	2.40	2.50	2.50	2.25@ 2.75								
Hocking mine run.....	Columbus....	1.50	1.65	1.65	1.35@ 1.70								
Hocking screenings.....	Columbus....	1.10	1.05	1.05	.80@ 1.00								
Pitts. No. 8 lump.....	Cleveland....	2.30	2.30	2.30	1.90@ 2.75								
Pitts. No. 8 mine run.....	Cleveland....	1.85	1.85	1.85	1.85@ 1.90								
Pitts. No. 8 screenings.....	Cleveland....	1.30	1.10	1.00	1.05@ 1.15								

\* Gross tons, f.o.b. vessel, Hampton Roads.  
† Advances over previous week shown in heavy type; declines in italics.

## Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market		Freight Rates	Feb. 23, 1925	Feb. 15, 1926	Feb. 22, 1926	
	Quoted		Independent	Company	Independent	Company
Broken.....	New York....	\$2.34		\$8.00@ \$9.25	\$9.00@ 10.50	\$8.25@ \$9.25
Broken.....	Philadelphia....	2.39		9.15	9.00@ 10.50	8.25@ 9.25
Egg.....	New York....	2.34	\$8.50@ \$9.00	8.75@ 9.25	9.25@ 15.00	8.75@ 9.25
Egg.....	Philadelphia....	2.39	9.45@ 9.75	8.80@ 9.25	9.25@ 10.40	8.75@ 9.25
Egg.....	Chicago*....	5.06	8.17@ 8.40	8.08	†	†
Stove.....	New York....	2.34	9.25@ 10.00	9.00@ 9.50	9.60@ 15.00	9.25@ 9.50
Stove.....	Philadelphia....	2.39	10.10@ 10.75	9.15@ 9.50	9.60@ 10.65	9.25@ 9.50
Stove.....	Chicago*....	5.06	8.80@ 9.00	8.53@ 8.65	9.25@ 15.00	8.75@ 9.15
Chestnut.....	New York....	2.34	9.50@ 10.25	8.75@ 9.40	9.25@ 10.40	8.75@ 9.15
Chestnut.....	Philadelphia....	2.39	10.00@ 10.75	9.25@ 9.40	†	†
Chestnut.....	Chicago*....	5.06	8.61@ 9.00	8.40@ 8.41	6.50@ 8.50	6.00@ 6.35
Pea.....	New York....	2.22	4.50@ 5.50	5.50@ 6.00	4.00@ 5.50	3.00@ 3.50
Pea.....	Philadelphia....	2.14	5.75@ 6.00	6.00	3.50@ 4.25	3.00@ 3.50
Pea.....	Chicago*....	4.79	5.36@ 5.75	5.36@ 5.95	2.25@ 2.75	2.00@ 2.25
Buckwheat No. 1.....	New York....	2.22	2.25@ 2.85	3.00@ 3.15	1.75@ 2.50	1.60@ 1.75
Buckwheat No. 1.....	Philadelphia....	2.14	2.50@ 3.00	3.00	2.00@ 2.25	2.00@ 2.25
Rice.....	New York....	2.22	1.90@ 2.25	2.00@ 2.25	1.75@ 2.50	1.60@ 1.75
Rice.....	Philadelphia....	2.14	2.00@ 2.25	2.25	2.25@ 2.75	2.00@ 2.25
Barley.....	New York....	2.22	1.40@ 1.65	1.50	1.50@ 2.00	1.60@ 1.75
Barley.....	Philadelphia....	2.14	1.50	1.50	1.50@ 2.00	1.60@ 1.75
Sirdsye.....	New York....	2.22	1.40@ 1.65	1.60	2.00	2.00

\*Net tons, f.o.b. mines. † No quotations.

Due to suspension of mining in hard-coal fields and practical stoppage of

90c., is now commanding \$1.25@\$1.50 for the better grades. Nut-and-slack is scarcer because many operators are screening out the nut coal.

There are some reports of sales of eastern Kentucky block at \$3.25@\$3.50, but \$2.50@\$3 is the range at Louisville. Two-inch lump is \$2.25; egg, \$2; nut, \$1.75; mine-run, \$1.35@\$1.75. Western Kentucky block is \$1.75@\$2.10; lump and egg, \$1.60@\$1.90; nut, \$1.35@\$1.50. Retail buying is on a hand-to-mouth basis. Middle houses are starting to seek contract renewals.

The coal trade at the Head of the Lakes is debating the question of the future of anthracite in the Northwest. It is estimated that 20 per cent or more of the normal hard-coal tonnage in this territory was replaced by other fuels the present season, but anthracite dock interests hope to recover lost ground and arrangements are under way to move the normal quantities up the lakes during the navigation season.

#### Shipments from Docks Decrease

Compared with January, there has been a falling off in shipments from the docks this month. Nevertheless, there is a substantial reduction in the stocks on hand. Although retail buying has been reduced to a minimum, the docks do not expect to carry over any smokeless coal into the new season and prices are firmly held. Demand for coke exceeds the supply.

There is a better movement of gas and steam coals to industrial consumers. March bookings show satisfying increases over February orders, notwithstanding the fact that the iron mining companies have been buying lightly. Stocks of screenings are melting down and prices on fine coal are stiff.

Domestic trade at the Twin Cities is a weather proposition. With the end of the anthracite strike, steam coal buyers have settled back into their old rut of indifference. Prices are weakening and the appearance of distress coal has not improved the situation from the seller's standpoint.

#### Milwaukee Demand Light

Milder weather has slackened the demand for coal in the Milwaukee market. Retail prices on nut and range coke are off \$1. This may be attributed to the end of the anthracite strike. The local trade, however, does not look for any early heavy shipments of hard coal to this territory, but the supply of other acceptable fuel for domestic consumption is ample.

The southwestern market is growing weaker. No prepared grade of Kansas coal now brings above \$4.50 and many operators are glad to receive \$4.25. There are approximately 300 "no bills" of lump and nut on track and about 125 cars of screenings. Prices on the latter, however, are firm. Most shippers ask \$2.35 and demand \$2.50. Retail stocks are light. Few mines are doing better than three or four days a week.

There has been no increase in domestic demand for Colorado coals. Running time has been cut to an 80 per cent basis, but "no bills" continue to accumulate. Prices, nevertheless, are unchanged and no reductions are contemplated. Transportation condi-

tions are excellent and there is an oversupply of labor.

"Rotten" is the way Utah operators describe business. There has been a heavy slump in demand for all prepared sizes, with nut the chief victim. The backbone of current movement is the consumption by the mining industries. "No bills" are a troublesome handicap, but no changes have been made in prices. Short running time is stiffening the market on slack.

#### Cincinnati Market Seesawing

In this period of readjustment, there is considerable seesawing of prices in the Cincinnati market. This movement has every appearance of continuing until some firm ground for future business is reached. High-volatile slack, for example, is stronger, but prepared sizes are weaker. Smokeless mine-run also is softer, but the low-volatile market as a whole seems to be holding its ground.

A number of factors have entered into the market on slack. The diversion of several hundred cars to Lake Erie ports for lake loading lessened the pressure. Dwindling stockpiles in Michigan also helped. The collapse of the premium demand for prepared coals made it necessary for producers

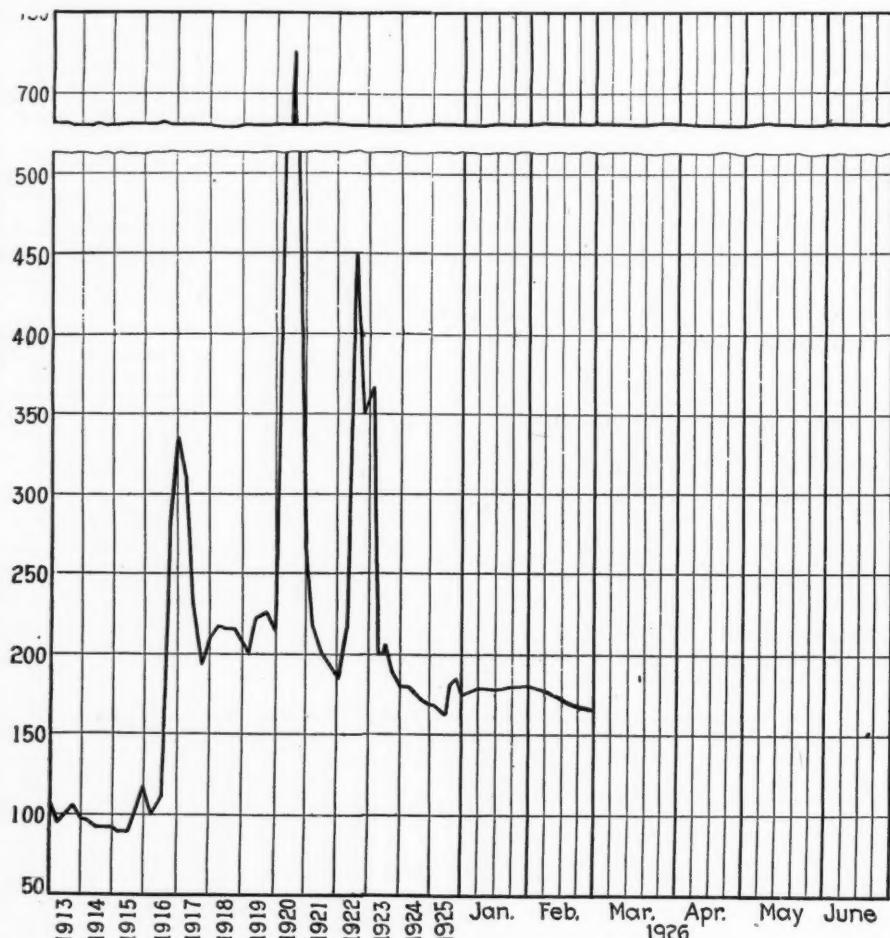
to hold to higher figures for slack coal. This same necessity strengthened mine-run quotations.

The present week probably will see a change in smokeless quotations. Weakness already is in evidence in Detroit and Chicago and there is no reason to believe that Cincinnati will escape. Lump and egg toward the close of last week were offered at \$4.25@\$4.50. Mine-run was off 25c., but this loss was made up in the prices asked for slack.

Movement of coal through the Cincinnati gateway dropped sharply last week. The total number of cars interchanged, according to the American Railway Association, was 12,120—a decrease of 1,223 cars. The greater part of the decrease was on the Chesapeake & Ohio Ry.

#### No Life to Central Ohio Trade

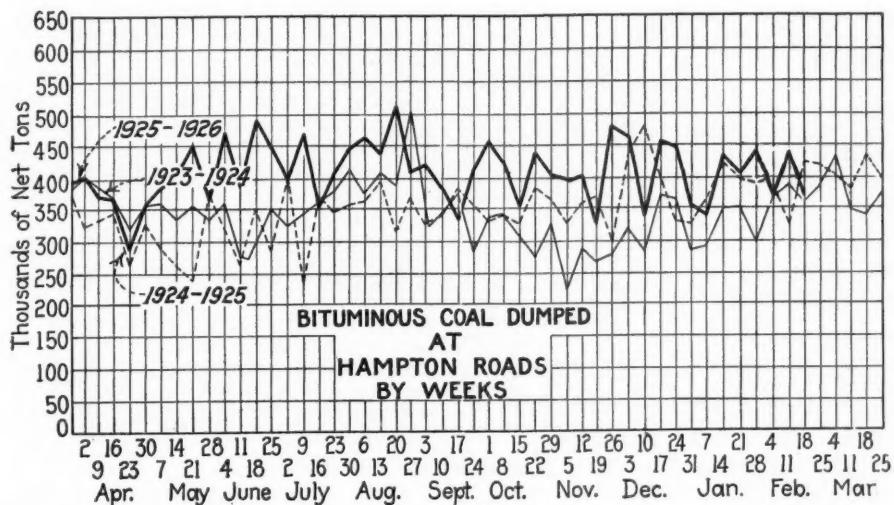
The coal business in central Ohio is featureless. Retail trade has been less active—the result of warmer weather—retail prices, however, are well maintained. There is little distress coal to upset the market. Steam buyers are playing a waiting game. Refusal of the majority of the operators to ship on open billing is holding down the tonnage that can be picked



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926	1925	1924			
Index	Feb. 22	Feb. 15	Feb. 8	Feb. 1	Feb. 23	Feb. 25
Weighted average price	\$2.06	\$2.10	\$2.14	\$2.16	\$2.03	\$2.23

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.



up at bargain-counter figures. A few industries are beginning to make inquiries about contract renewals.

Production in the southern Ohio field is under 20 per cent of capacity. Some of the larger mines have closed down and will not reopen until the lake season is under way.

Northern Ohio shippers, like their more southerly brethren, also complain of poor domestic demand. Nominaly, prepared coal prices are unchanged, but distress offerings are having a depressing effect upon the actual spot transactions. Quotations on screenings, on the other hand, have advanced a dime as a tribute to decreased production arising from the lessened movement of prepared sizes.

The No. 8 field produced approximately 270,000 tons during the week ended Feb. 13. This was 38 per cent of capacity. Compared with the preceding week the output decreased 26,000 tons.

## Pittsburgh Returns to the Husks

Predictions that the end of the anthracite strike would mark the end of eastern retail buying of Pittsburgh district egg coal have been swiftly verified. It is now forecast that the \$2.75 @ \$3.25 range on that size will sink to \$2@\$2.25. Demand from regular customers also has lightened. Slack has been under increasing pressure and quotations weakened to 90c.@\$1 on steam and \$1@\$1.15 on gas slack. Decreased lump production, however, may soon change this drift. The district as a whole is producing about 30 per cent of capacity.

Central Pennsylvania quotations have slumped and the future is uncertain. Pool 1 was offered last week at \$3.10 @ \$3.45; pool 9, \$2.60 @ \$2.75; pool 71, \$2.85 @ \$3.10; pool 10, \$2.35 @ \$2.45; pool 11, \$2 @ \$2.10; pool 18, \$1.85 @ \$1.90. Slack is \$2; prepared coals, \$3.50 @ \$4.50. District loadings the week ended Feb. 13 were 22,385 cars, as compared with 21,137 cars the week preceding.

Buffalo bituminous shippers are still struggling to recover from the effects of the sudden termination of the anthracite strike. Slack has sold at Canadian points within the past ten days at 10c. and it is difficult to get \$1 at the mines. Nominally, however,

the price range is unchanged from that of recent weeks.

## New England Still Favors Anthracite

In spite of the official ballyhooing for bituminous coal, the anthracite settlement has taken all the starch out of the market for substitute fuels for domestic consumption in New England. Retail dealers are more anxious to unload stocks on hand than to order forward more cars. On top of this, the industrial consumer is again showing a lack of interest in the market.

Prices dropped off over night. Prepared smokeless fell from \$8 net, f.o.b. mines, to \$4.75, with some central Pennsylvania offerings at \$3.25. All-rail Pennsylvania is back in the doldrums of last summer. Shippers, of course, will try to hold a market for screened coal, but the success of their efforts appears very dubious.

F.o.b. "Hampton" Roads, the prices have softened to \$4.75 per gross ton for everything except Navy Standard, which is \$4.85@\$5. Contract tonnage is moving in fair volume, but inquiry for spot cargoes is light. For inland delivery the price on cars at Providence has dropped from \$7 to \$6@\$6.15. At Boston, the slump has been less pronounced.

## **Cancellations Swamp New York**

There has been such a wave of cancellations of orders received by the New York trade that some shippers question whether the retailer is not

over-estimating the capacity of the hard-coal mines to make prompt deliveries. Coke has been the hardest hit. Sized coke is down to \$6.50, with some reports that business could be booked at \$4.50. Local retailers, however, paid \$15@\$18 for loaded boats in New York harbor.

Bituminous mine-run is holding its position. The best coals are well sold up and prices are steady. Cheaper grades were slightly easier. Prepared sizes of high-volatile, on the other hand, dropped \$1, and smokeless nut and egg declined \$2.50@\$3.50.康  
gestion at the piers has given the tide-water market a strong tone.

Delays in transportation retarded the slump in the Philadelphia bituminous market last week. Prices declined about 25c., but further recessions are expected after the rail congestion has been cleared up. The local coke market has gone to pieces. Oven prices on sized coke are down to \$5@\$6, with no demand.

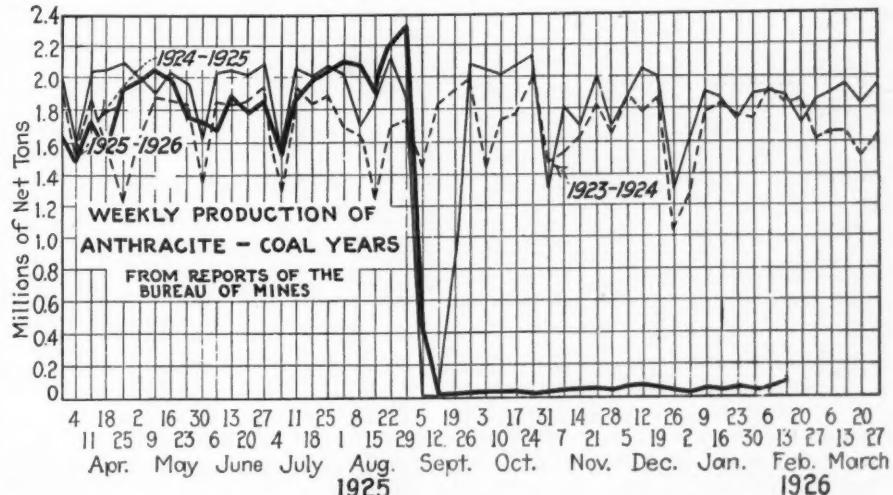
## Interest in Contracts Revived

The end of the domestic boom has diverted the interest of the soft-coal producers to industrial contracts. Both buyer and seller, however, will do considerable sparring on prices before closing. The position of the operators on slack has been strengthened. The slump in demand for prepared sizes means less slack at bargain figures and the resumption of operations at the cement mills means a broader market.

Gas-coal shippers, who enjoyed an overflow business when low-volatile mines were unable to keep up with domestic demand, are now trying to line up railroad contracts to take care of production.

Except for a flood of cancellations of orders for sized bituminous coal, the end of the anthracite strike has had little effect upon the Baltimore soft-coal market. Industrially a moderate to fairly brisk call for ordinary runs of coal continues. Prices show no material change.

There has been a slight weakening in demand at Hampton Roads. Mine prices on prepared sizes of bituminous coal have dropped approximately \$2, but retail quotations are unchanged. Foreign business is subnormal. Coastwise movement also is off. Bunker trade is about holding its own.



## Car Loadings and Supply

	Cars Loaded	Cars	Cars
	All	Coal	Cars
Week ended Feb. 6, 1926.....	914,904	175,964	
Preceding week.....	925,263	183,071	
Week ended Feb. 7, 1925.....	928,244	192,655	
Surplus Cars	Car Shortages		
All Cars	All Coal		
Feb. 7, 1926....	240,424	93,207	
Jan. 30, 1926....	250,935	92,040	
Feb. 7, 1925....	199,210	63,561	

Demand for the cheaper grades of steam coal in the Birmingham market is easier and some concessions have been made in prices. There is still a good movement of the better coals from the Cahaba and Warrior fields, but no overwhelming activity in any section of the trade. Contract customers are taking their full quotas. Spot bunker business showed an increase.

The most cheering news is that some consumers already have signed up contracts for the new year at prices above those written in the expiring agreements.

Domestic demand has been affected adversely by weather conditions. Medium and high-grade coals have a spotty strength, but the cheaper grades are sluggish. There has been no break in the coal market. Some reduction in price, however, is anticipated with the resumption of anthracite mining, but it is believed that demand will absorb the output for some time to come.

## Rush to Unload Substitutes

The first shipment of anthracite reached the Jersey terminals in less than twenty-four hours after the whistles had blown at the mines and was soon on its way to retailers in New York and Westchester County. The retail distributors, however, were more concerned with the problem of clearing

out stocks of substitute fuels in their yards than in clamoring for immediate deliveries of hard coal.

The majority of the larger old-line producers announced that their prices would be the same as the schedule in effect prior to the strike. Independent egg, stove and nut were held at \$10.50 @ \$15; pea, \$7 @ \$8.50, and No. 1 buckwheat, \$4.50 @ \$5.50. Some of the early shipments of independent tonnage, it was reported, would be billed at March prices, as yet unannounced.

Reading prices, made public at Philadelphia last Thursday, were on the following basis: White ash steamboat, \$9.50; broken and egg, \$9.15; stove, \$9.40; chestnut, \$9.15; pea, \$6.25; buckwheat, \$3; rice, \$2.25; barley, \$1.75. Lykens Valley steamboat to nut for February shipment are held at \$1 above the white ash schedule. On Lykens Valley pea, the price is \$6.70; buckwheat, \$3.75; rice, \$2.70; barley, \$2.10. Independent prices on domestic coals are 75c. @ \$1.25 above the Reading white ash basis; steam sizes, 50 @ 75c.

## Cancellation the Order of the Day

Philadelphia retailers were busy cancelling orders on soft coal and coke. Nevertheless there is still considerable tonnage in transit and in retail yards. Consumers are cutting down on their orders, hoping that a small quantity will carry them over until anthracite is received. Some retailers are trying to dispose of stocks of coke by forcing consumers to take it in combination with deliveries of buckwheat and pea.

Baltimore retailers who cancelled orders for prepared bituminous as soon as the anthracite strike was settled could not move fast enough to stop a flood of shipments released to forestall such action. It is doubtful whether they will be able to dispose of this tonnage before anthracite is moving in

normal volume. Householders are losing no time in placing orders for their favorite fuel.

Buffalo was promised its first shipments of anthracite this week. The question now uppermost is how much of a hold substitutes have been able to get during the long suspension. Many consumers assert that they are "through" with anthracite, but these threats are discounted.

## Connellsville Sinking Down to Normal

"Normalcy" is rapidly returning to the Connellsville coke market. "Normalcy" means, among other things, that the producer who had not supplied the eastern retail buyer or jobber with car numbers before the anthracite agreement was signed was out of the running.

There was no spot buying of any kind for several days. Late in the week there were some small orders for run-of-oven coke placed at \$4 @ \$4.25. A blast furnace covered for the rest of the month at \$4. Crushed coke was offered at \$5. There has been practically no demand lately for foundry coke except to fill out contracts.

Some operators with coal that will do for gas-making already are looking for a market. Ovens which have been enjoying the high-dollar trade, however, hardly will be able to curtail production fast enough to meet the coke situation and the possibility of coke accumulations in the field is far from remote.

The Connellsville *Courier* reports coke output in the Connellsville and Lower Connellsville regions for the week ended Feb. 13 at 120,200 tons by the furnace ovens and 124,860 tons by the merchant ovens. Compared with the preceding week, furnace oven output decreased 4,000 tons; merchant oven production, 1,780 tons.

## Coal Produced in Illinois in 1924

(Exclusive of Product of Wagon Mines)

County	Net Tons			Value			Number of Employees a			Average Number of Days Worked a	Average Tons per Man per Day
	Loaded at Mines for Shipment	Sold to Local Trade and Used by Employees	Used at Mines for Steam and Heat	Total Quantity	Total	Average per Ton	Underground Miners b	All Others	Surface		
Bond, Clinton, Gallatin, Jefferson and White.....	1,379,101	89,135	56,935	1,525,171	\$3,040,000	\$1.99	1,453	345	216	2,014	147
Bureau.....	335,448	54,330	27,464	417,242	1,421,000	3.40	976	266	125	1,367	126
Cass, Edgar, Greene, Hancock, Macon, Schuyler, Scott, Shelby and Warren.....	68,310	174,222	9,736	252,268	859,000	3.41	346	145	44	535	163
Christian.....	3,461,984	167,749	46,513	3,676,246	7,450,000	2.03	2,503	787	312	3,602	162
Franklin.....	12,625,266	114,714	170,582	12,910,562	31,520,000	2.44	8,682	4,029	1,464	14,175	177
Fulton.....	1,762,349	81,665	15,178	1,859,192	4,436,000	2.39	1,926	519	351	2,796	146
Grundy.....	358,390	15,179	11,713	389,282	1,095,000	2.84	414	155	57	626	222
Henry.....	16,291	26,819	1,802	44,912	163,000	3.63	136	38	21	195	185
Jackson.....	1,465,764	53,219	22,453	1,541,436	3,418,000	2.22	950	410	235	1,595	158
Knox.....	7,731	616	8,347	23,000	2,76	23	3	5	31	142	1.90
La Salle.....	284,397	285,800	11,852	582,049	1,892,000	3.25	912	186	118	1,216	183
Livingston.....	25,336	1,730	27,066	96,000	3.55	64	27	17	108	97	2.59
Logan, McLean, Putman, Will and Woodford.....	415,886	151,314	26,795	593,995	1,766,000	2.97	1,284	308	158	1,750	135
McDonough.....	2,733		2,733	11,000	4.02	14				14	157
Macoupin.....	5,632,873	81,774	125,972	5,840,619	12,442,000	2.13	3,807	1,664	454	5,925	163
Madison.....	2,980,098	206,351	87,097	3,273,546	6,922,000	2.11	3,011	1,051	323	4,385	119
Marion.....	299,014	36,875	32,427	368,316	773,000	2.10	559	185	89	833	118
Peoria.....	745,452	130,207	8,099	883,758	2,178,000	2.46	1,105	286	124	1,515	145
Perry.....	1,813,461	73,496	58,419	1,945,376	4,003,000	2.06	1,609	624	325	2,558	127
Randolph.....	1,087,865	31,044	33,724	1,152,633	2,986,000	2.59	1,202	458	148	1,808	114
Rock Island.....	1,200	18,118	452	19,770	57,000	2.88	29	10	7	46	99
St. Clair.....	3,078,399	385,613	81,506	3,344,518	6,875,000	1.94	4,059	1,215	463	5,737	113
Saline.....	4,725,394	72,390	102,373	4,900,157	11,229,000	2.29	4,276	1,789	659	6,724	146
Sangamon.....	5,637,737	349,377	89,175	6,076,289	13,054,000	2.15	6,971	2,025	646	9,642	139
Stark.....	5,512	10	5,522	17,000	3.08	21	1	1	23	151	1.59
Tazewell.....	640,081	116,029	6,095	762,205	2,030,000	2.66	607	207	82	896	201
Vermilion.....	3,045,705	303,445	37,333	3,386,483	7,968,000	2.35	2,400	860	576	3,836	171
Washington.....	114,919	56,940	6,468	178,327	434,000	2.43	465	181	73	719	54
Williamson.....	9,049,509	86,656	185,462	9,321,627	20,657,000	2.22	7,046	2,528	1,146	10,720	145
Total.....	63,689,920	3,319,700	1,313,661	68,323,281	\$155,260,000	\$2.27	59,451	21,306	8,606	89,363	148

a Note that figures of men employed and days worked do not include mines that operated in 1923 but were idle the entire year 1924; they do include many mines operated for a short time only in 1924. The number of active mines of

commercial size in Illinois was 575 in 1923 and 488 in 1924.

b Includes also loaders and shotfirers.

Statistics compiled by U. S. Bureau of Mines.

## Foreign Market And Export News

### British Trade Retains Strong Position on Prices; Forward Bookings Heavy

The position of the British coal market generally is satisfactory. Exports are brisk and as orders are executed a steady replacement is taking place. An improving output, readily absorbed, testifies the underlying strength of the market. Demand from France shows revival, greatly due to the rise in native prices and the cheapness of British supplies.

Contract business is negligible, but buyers show a ready disposition to book up well over February, and also, in some cases, into March. Dry large coal supplies are adequate, but clearances are slow. Monmouthshire coals are firm. All the collieries are heavily sold over the month, particularly Black Veins.

The second week of February was not active on the Newcastle market either in actual business or in demand for forward contracts. Prices, however, remained stable, and in the case of best steam coals there has been an increase of about sixpence.

Cokes have been much quieter, but even there the quotations have not altered and are held firmly. Gas concerns both at home and abroad are inquiring freely for supplies. Though much of the inquiry is a safeguard against the consequences of a stoppage so far as home buyers are concerned, that is hardly the case in respect of foreign buyers, their business representing a genuine improvement in trade.

Output by British collieries during the week ended Feb. 6, according to a special cable to *Coal Age*, totaled 5,415,000 gross tons, compared with 5,495,000 tons in the preceding week.

### Belgian Market Still Strong

The slight improvement in the Belgian market which began toward the end of January shows a tendency to steadiness, with prices still firmer. The fact that work has been resumed at Charleroi iron and steel plants has revived demand for industrial coals and the stocks of these grades are diminishing rapidly—particularly stocks of semi-bituminous and quarter-bituminous. Even in the Borinage district the situation is better owing to the con-

tinual lessening of foreign competition and the higher prices on French coals.

In domestic fuel, the situation remains good. Orders are still plentiful.

Greater firmness also is noticeable in coking smalls. The Coke Syndicate maintains the price of 125 fr., but it is a nominal rate as there are offers made at 115 fr. Reparation coke is quoted at 120 fr.

### French Coal Market Sold Ahead; Keen Demand for Gas Coals

Paris, France, Feb. 6.—The situation from the seller's standpoint, is very satisfactory. The majority of the French works are behind in shipment. Flaming coals are particularly scarce.

The price increase on Nord and Pas de Calais fuel is accepted without difficulty. In this respect it should be pointed out that the screened 20 m/m. were quoted at 113 fr. in November, 1923; 110 fr. in March, 1924; 110 fr. 20c. in June, 1924; 119 fr. 60c. in October, 1925, 119 fr. 60c. in January, 1926.

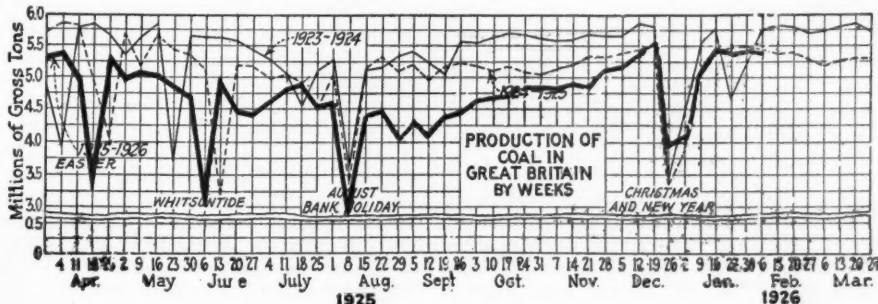
In the Loire coal field the wage question is not yet settled. The coal owners agree to grant the increases asked, but the amount is not yet fixed. The Loire collieries, however, have raised their prices 6 fr., as of Jan. 16. Prices on Belgian graded coals to France during February will be calculated upon the basis of 82.75 Belgian francs to 100 French fr.

	Semi-bituminous.	Quarter-bituminous.	Lean	Anthracitic
Lump.....	163.15	165.15	163.15	.....
Cobbles 80/120.....	174.	174.	184.90	201.25
Cobbles 50/80.....	217.50	217.50	223.55	241.50
Nuts 30/50.....	229.60	229.60	235.65	253.80
Beans 20/30.....	161.	161.	161.	.....

For semi-bituminous, second choice, 5 fr. less than the first choice.

German reparation fuel receipts are heavier than they were some time ago, when they were delayed or impeded through the flood of the Rhine, but exact figures for 1926 are not available. During 1925 France received 8,230,220 tons of reparation fuels from the Ruhr, or a monthly average of 686,000 tons.

From Feb. 1 the price on reparation coals shipped by sea was increased 4 fr. per ton; for those delivered via Jeumont and Givet (Franco-Belgian frontier), the anthracite sorts were increased 12 and 7 frs.; sized coals (including lignite briquets) 5 frs. Industrial coals delivered through the Rhine are up 4@19 frs. and domestic coals, 5 frs.



### British Coal Exports Decline

British coal exports during January, 1926, totaled 4,148,042 gross tons as compared with 4,632,051 in December, 1925, and 4,337,768 tons in November.

January exports were valued at £3,821,336, or an average per ton of slightly less than \$4.50. Exports to the United States totaled 121,100 gross tons of an average value of \$10 per ton, while exports to Canada were 16,000 gross tons, averaging \$8.75 per ton. These figures do not reflect recent good export orders. The subvention is reflected in the low average values of exports.

The collieries of Wales are heavily sold in anticipation of price increases and a still stronger market, as the situation in the United States and the reappearance of the Paris-Orleans Rys. in the South Wales market as a purchaser of coal after a year's absence, implies other orders.

### Export Clearances, Week Ended

Feb. 18, 1926

#### FROM HAMPTON ROADS

	Tons
For New Brunswick:	
Nor. Str. Facto, for St. John.....	1,629
Du. Str. Lekhaven, for St. John.....	6,555
For Italy:	
Ital. Str. Lodovica, for Trieste.....	4,517
Ital. Str. Valverde, for Bagnoli.....	6,375
Ital. Str. Armando, for Porto Ferrajo	6,908
For France:	
Nor. Str. Hektor, for Marseilles.....	1,256
For Brazil:	
Br. Str. W. I. Radcliffe, for Rio de Janeiro.....	7,720
For Argentine:	
Grk. Str. Ithaki, for Rosario.....	5,462
For Cuba:	
Br. Str. Berwindmoor, for Havana..	9,837
Br. Str. European, for Havana.....	4,496

### Hampton Roads Coal Dumpings\*

(In Gross Tons)

	Feb. 11	Feb. 18
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week.....	188,175	153,768
Virginia Piers, Sewalls Pt.:		
Tons dumped for week.....	90,181	73,718
C. & O. Piers, Newport News:		
Tons dumped for week.....	122,210	95,413

\*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shipper's protest.

### Pier and Bunker Prices, Gross Tons

#### PIERS

Feb. 13 Feb. 20†

Pool 1, New York....	\$6.00@ \$6.25	\$6.00@ \$6.25
Pool 9, New York....	5.50@ 5.75	5.50@ 5.75
Pool 10, New York....	5.25@ 5.50	5.25@ 5.50
Pool 11, New York....	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia....	5.55@ 5.85	5.50@ 5.55
Pool 10, Philadelphia....	5.35@ 5.50	5.10@ 5.25
Pool 11, Philadelphia....	5.00@ 5.25	4.75@ 5.00
Pool 1, Hamp. Roads....	5.00@ 5.10	5.40@ 5.50
Pool 2, Hamp. Roads....	4.80@ 4.90	4.90@ 5.00
Pools 5-6-7, Hamp. Rds....	4.40@ 4.50	4.40@ 4.50

#### BUNKERS

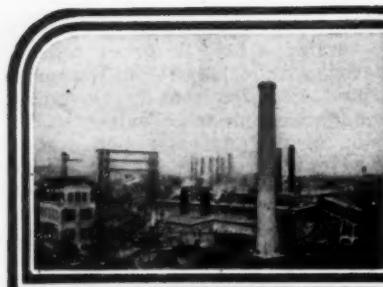
Pool 1, New York....	\$6.25@ \$6.50	\$6.25@ \$6.50
Pool 9, New York....	5.75@ 6.00	5.75@ 6.00
Pool 10, New York....	5.50@ 5.75	5.50@ 5.75
Pool 11, New York....	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia....	5.80@ 6.05	5.55@ 5.80
Pool 10, Philadelphia....	5.60@ 5.75	5.35@ 5.60
Pool 11, Philadelphia....	5.25@ 5.50	5.00@ 5.25
Pool 1, Hamp. Roads....	5.10	5.50
Pool 2, Hamp. Roads....	4.90	5.00
Pools 5-6-7, Hamp. Rds....	4.50	4.50

### Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to *Coal Age*

Cardiff:	Feb. 13	Feb. 20†
Admiralty, large.....	23s. @ 24s.	23s. 6d.
Steam smalls.....	14s. 6d.	14s. 6d.
Newcastle:		
Best steams.....	17s.	17s.
Best gas.....	17s. 6d.	17s. 6d.
Best bunkers.....	17s. @ 18s.	17s.

Advances over previous week shown in **heavy type**; declines in *italics*.



## News Items From Field and Trade



### ALABAMA

Gen. T. Q. Ashburn, executive officer of the Inland Waterways, has been in the Birmingham district making an inspection of the Warrior River service and terminal facilities at Birminghamport. A large amount has been appropriated by the federal government for improvements at the terminals on the Warrior River and a number of additional steel barges which are now under construction will soon be placed in commission and the embargo against Cordova and several other ports will be lifted. General Ashburn stated that the Inland Waterways Corporation probably would take over the Ensley Southern Ry., which recently was bought from the Southern Ry. by the Port of Birmingham Co. This line extends from Birmingham to Birminghamport. It is understood that the line will immediately be rehabilitated and additional rolling stock and motive power provided and it will be operated for the Port of Birmingham Co. by the Tennessee Coal, Iron & Railroad Co., affording an independent rail connection between Birmingham and the river. This probably will bring about a large increase in the movement of coal from the district by water to the southern ports.

The Pratt Fuel Co., which recently purchased and took over the holding of the Alabama By-Products Co. at Dora, is preparing to mine coal on a large scale at Kershaw Mines, near Dora. A mammoth coal washer will be constructed.

### COLORADO

The new mining law which requires all coal mines to install air circulating systems and have a licensed man in charge was tried out in court by Fred Sevcik of Colorado Springs, and he won the case against James Dalrymple, state mine inspector, in the lower court. The case probably will be carried to the state Supreme Court.

J. B. Marks, who for the last year has been assistant to J. F. Welborn, president of the Colorado Fuel & Iron Co., recently was appointed vice-president in charge of sales, traffic and purchase for that company. He has been with the company since 1901.

### ILLINOIS

Between thirty and thirty-five coal drilling outfits are now being worked daily on two tracts of land immediately west of Duquoin, having been started the latter part of January by an Indiana concern. No official announce-

ments have as yet been made. The coal at the location is of good quality, averaging from 25 to 55 ft. under the surface and is about 6½ ft. thick. With progress being made at the present rate of speed, it is estimated that the owners will begin to move machinery and material toward the site by April 1 or earlier.

By-Products Coke Corp., Chicago, reports for year ended Dec. 31, 1925, net income of \$874,570 after taxes, charges and reserve for contingencies. This is equivalent, after allowing for dividend requirements on nine per cent preferred stock, to \$7.76 a share earned on 94,953 shares of common stock, and compares with deficit of \$498,222 in 1924.

Some community co-operation has meant more than a year of reasonably steady work at Mine No. 4, owned by the Illinois Fuel Co. and under lease at the present time to the Wall Coal & Mining Co., at Sparta. Through the co-operation of employees of the mine with the Randolph Club of Sparta, options were obtained the last week in January on forty acres of coal land which was necessary to continue operation of the mine. Since the option was obtained, miners and business men have advanced more than \$4,000 for the purchase of the coal and will lease the land to the Wall Coal & Mining Co. for operation purposes as soon as the deal is completed. For some time the coal company endeavored to secure the coal underlying this particular forty-acre tract, but declined to buy it outright. The owners refused to sell the coal on a royalty basis and a shutdown of the mine on May 1, 1926, was threatened. The Randolph Club learned of this condition and after consulting officials of the coal company obtained an option on the coal from the owners of the land.

M. E. Pervier and C. C. Pervier, Annawan, have opened a new coal mine southeast of that town.

The Chicago Title & Trust Co. on Feb. 16 filed a foreclosure suit in the Williamson County Court under a mortgage on the property of the Sunnyside Mining Co. amounting to \$450,000. The company's mine has been shut down since January, 1925. Recently its tipple was damaged by fire. The company owns more than 100 acres of coal lands.

The airshaft for the coal mine of the Galesburg Coal Co., at Galesburg, was completed Feb. 1 and is now connected up with the entry. The air shaft is 120 ft. deep and passes

through a number of seams before reaching the No. 1, which is the one of commercial value. Steps will be built in from top to bottom, so that there will be a way of escape from the mine.

### INDIANA

The final chapter in the history of the Rockville Coal Mining Co., which attracted considerable capital in that section some years ago, was written Feb. 11 when all the properties of the company were sold under the sheriff's hammer for \$2,506. The mine, although located near the big bituminous fields of western Indiana, was a losing enterprise from the start and has been shut down for nearly a year.

Mining rights to coal seam No. 5, in Riley Township, near Terre Haute, have been granted to Donald Faulkner for a term of twenty years. The lessors are to receive 15c. for each ton of coal mined and an amount equal to at least 6,000 tons annually. The land is just northeast of the town of Riley.

Clem Richards, coal operator of Terre Haute, Ind., is expected to be a candidate for state chairman of the Republican party in Indiana. Mr. Richards always has taken an active part in politics and has held many appointive organization offices in western Indiana.

The Old Knox Mining Co., Indianapolis, which operates the Knox Mine, in Knox County, has been placed in the hands of a receiver. Jacob S. White, Indianapolis attorney, was named receiver and placed under bond of \$25,000. The receiver was ordered to continue operation of the company's business. The company owns approximately 3,500 acres of land in Knox County. The petition for a receiver was filed by George B. McKibbin, a stockholder, who alleged the company to be in danger of insolvency.

### KENTUCKY

Unionization activities carried on in southern Indiana during the last few weeks by the United Mine Workers will be extended to include western Kentucky about March 1, according to William Thompson, of Ft. Branch, Ind., chairman of the organization committee of District 11. Approximately 3,000 miners recruited from Illinois, Indiana and Ohio will compose the "army" which, it is planned, will march from mine to mine in the Kentucky field during the campaign, Thompson said. Similar tactics were employed in south-

ern Indiana, where all but two non-union mines, the Crescent and Sunnyside of Evansville, are now closed. Tyler Lawton, president of District 11, denies that any such unionization movement is contemplated in Kentucky.

Another effort was made in the Kentucky Legislature on Feb. 16 to bring out a coal tonnage tax bill. However, at the opening of the legislative season this year a rule was made that if a bill is defeated, no similar bill shall be taken out of committee or acted upon, and if a bill is killed in one house, the other division of the Legislature will not waste time with it, as the matter would be under the heading "Disposed of." A vote on the ruling went 68 to 20, in sustaining the rule, and the bill of Representative Strange, of Bowling Green, is dead. As usual, Representative Jones, of the Harlan-Leslie district, led the arguments favoring the coal operators.

#### KANSAS

Contrary to early predictions of mine union officials following the recent run-off election between Pittsburg and Frontenac for headquarters for District 14, United Mine Workers, the offices will remain in Pittsburg. Early returns from the election, which was held Feb. 2, indicated the miners of the district favored Frontenac, but the final canvass of ballots, Feb. 10, gave Pittsburg a majority of 393. The run-off election followed a special election in December to choose between Arma, Frontenac and Pittsburg. In that election Arma was eliminated. Frontenac received more votes than either of its competitors, but did not obtain a majority of all votes cast, necessitating the run-off of Feb. 2.

#### NORTH DAKOTA

North Dakota mines produced 1,357,408 tons of lignite valued at \$2,601,807.47 in 1925, it is shown in the annual report of A. Waddington, state mine inspector. This is the second largest annual tonnage mined in the history of the state. In 1923, 1,435,605 tons were produced. The production increase over 1924 is 327,959 tons, and the valuation increase is \$325,985.47.

#### OHIO

At a meeting of the stockholders of the Peerless Elkhorn Coal Co., which had headquarters in Columbus, held Feb. 11 the company was dissolved. The property has been taken over by the Hatton, Brown & Co., Inc., of which concern it was a subsidiary. The property consists of an operating mine in the Elkhorn district of Kentucky. F. G. Hatton was president and George F. Schwartz, secretary of the corporation. No change is being made in the management of the concern and the mine will continue to operate as in the past.

Following a cave-in in the main entry of the Union Mine, near Pomeroy, work has been resumed by about 100 miners. None was injured and work was suspended for about 10 days.

Orders have been given by the Sauters Coal Co. for the cleaning up of the Gaylord mine, near Martins Ferry, preparatory to starting operations after a long idleness. It is planned to give employment to about 175 men and to operate at full capacity.

W. K. Field, president of the Pittsburgh Coal Co., who had been confined to his home in Columbus for a few weeks, owing to a severe attack of influenza followed by a heart attack, is recovering and again able to be out. He will soon take up his duties at the company's main office in Pittsburgh.

Jerome Watson, head of the Ohio Department of Mining made a personal investigation of the explosion in the shaft of the Powhatan mine, near Bellaire, which occurred Feb. 15 causing the death of one man and injury to 18 others. He was assisted by several deputy inspectors in the eastern Ohio district. The results of the investigation have not been made public but it is believed that a short-circuit was responsible. The main shaft and tipple were wrecked by the explosion, which occurred soon after the day force went to work. The men had gone on a strike because the Powhatan Coal Co., the owner, paid by check, but had voted to return to work. The mine was formerly owned by the Cleveland & Western Coal Co. Several of those injured, principally burned, are not expected to recover.

#### PENNSYLVANIA

The Clearfield Bituminous Coal Corporation will launch a large reforestation program this spring with the planting of 1,030,000 seedlings in Indiana, Cambria and Clearfield counties, under the direction of R. D. Tonkin, the coal company's forester. Several years ago the company established a forestry department on a large scale. Since the spring of 1920, including last year, approximately 1,115,550 trees have been planted on lands of the corporation, which owns the surface rights of some 26,000 acres suitable for the growing of timbers. The state forestry department has furnished about 50 per cent of the trees planted thus far.

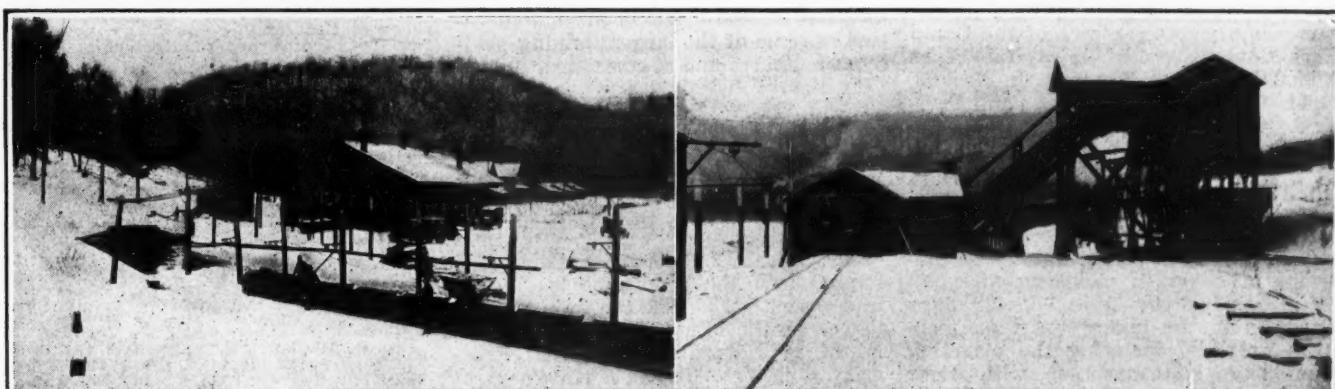
Jones & Laughlin is completing the construction of 122 new byproduct coke ovens at its Aliquippa works and hopes to have them in operation by March 1. This will add 1,800 net tons to the daily capacity of the plant. By May 1, Jones & Laughlin hopes to have completed the erection of 60 other ovens at the Pittsburgh works, these to have a daily capacity of 600 tons.

The Lehigh Coal & Navigation Co. reports for the year ended Dec. 31, 1925, net income of \$1,794,796 after charges and taxes, equal to \$3.06 a share. This compares with \$2,548,067, or \$4.35 a share, in 1924. There was a deficit of \$544,676 against a surplus of \$208,595 the preceding year.

The Buffalo & Susquehanna Coal & Coke Co. is in a queer lawsuit. Some time ago an agreement was made with the miners in one of its mines at DuBois that they should continue to work at unchanged wages till a certain contract was filled and they should forfeit \$1 a day if they quit work previous to that. Some of them did leave and were docked in their pay. Now two of them, Harry Carns and Dominic Stephanowski, are suing the company for the recovery of \$20 each so withheld.

In a suit just filed in federal court at Scranton, Warren T. Acker asks for an injunction to restrain the South Penn Collieries Co. from proceeding with a \$2,000,000, bond issue, alleging that a contract he has with the concern has been broken in that he has

#### Pennsylvania Coal & Coke Corp. Starts No. 18 Mine After Two-Year Shutdown



This mine, at Barnesboro, Pa., was opened in 1917 as colliery No. 3 of the Watkins Coal Mining Co. It is in the Lower Kittanning or Miller seam. The picture at

the left shows an empty trip about to enter the mine. The stone building in the background is a combination office, shop, substation and lamp house. The tipple,

shown in the other picture, is about 2,000 ft. from the mine opening. The cars are handled in a cross-over dump, and the coal is elevated by an apron conveyor.

been virtually forced out as general manager. The local man asks the court to order the company to restore his former rights to him, that he also receive permission to inspect the books of the company and that the court order the company to pay him for whatever money damage it deems he is entitled to. Mr. Acker at one time was owner of the Von Storch mine, in Scranton, which he sold to the South Penn company for more than \$2,000,000 several years ago. He alleges that in this deal the company unloaded much worthless stock on him and that coal holdings of the concern in other parts of the anthracite field were misrepresented. Former Governor Sproul of Pennsylvania is president of the South Penn company, and R. H. Buchanan, for years identified with the Hudson Coal Co., is general manager.

#### UTAH

George W. Evans, consulting coal mining engineer, of Seattle, declared in a recent address at Price that Utah coal fields are 100 per cent overdeveloped at present both in mines and man power. He said, however, that just as soon as Carbon County coal can be placed on the Northwest market at a price less than crude oil, there will be a huge demand and production will be greatly increased. It is understood that Mr. Evans was in the Utah field for the purpose of looking over the situation on behalf of certain interests of Seattle that will open mines there as soon as they feel the demand justifies such action.

Five coal companies in nearly as many cities in the state have been awarded reparation by the Public Utilities Commission in connection with coal shipped in 1921 and 1922 in intrastate commerce. The payments were made on domestic lump coal which had been charged at the straight lump rate. The commission held that the mine-run rate should have been charged.

#### WEST VIRGINIA

More general development of coal lands in Nicholas County is presaged by the organization of the Camp Fork Coal Co., with chief works at Greendale. Only recently the Gauley Fuel Co. was organized to operate in the same county. Organizers of the Camp Fork Coal Co., which is capitalized at \$200,000, include George C. Backus, E. M. Johnson, C. D. Burgess and G. R. Krebs, all of Charleston.

The Supreme Court of West Virginia declined on Feb. 11 to issue a writ of error in connection with the fines and jail sentences imposed on certain union miners in Barbour County for contempt of court in picketing after an injunction had been granted. The men appealed to the higher court on technical grounds, declaring the picketing was done in connection with their membership in the United Mine Workers. Plaintiffs in the case where the Bear Valley Coal Co., Tresler Coal Co., Cambria Coal Co., Brown Coal Co., Grier Gas Coal Co., Bear Mountain

Gas Coal Co. and the Blocky Pittsburg Coal Co.

More than 100 employees of the Wood Sullivan Coal Co. were present at a safety rally of the company at Vanwood on Feb. 12, held in connection with the general safety campaign now being inaugurated by the West Virginia Department of Mines. District Inspector Rumberg outlined the program of the state department and asked for the co-operation of the men in the mines. Co-operation on the part of officials of the company was assured and it was pointed out that safety rules were being placed in effect at the several plants of the company.

The plants and property of the Wake Forest Mining Co., operating on Cabin Creek, have been purchased by the Wyatt Coal Co., headed by John Laing. The transfer of the property became effective Feb. 1. The Wake Forest company was owned by J. C. Grimm, Charles Cabell, John L. Dickinson and the late J. R. Thomas, Mr. Grimm being the president of the concern. The company owned two mines on the line of the Chesapeake & Ohio. These mines had a capacity of 400 tons a day, but it is planned by the purchasing company to increase the capacity to 1,000 tons a day and James Martin, who has for some time been the manager of the Wyatt Coal Co., will take over the management of the two additional mines.

Among the new equipment to be installed at the Fordson Coal Co.'s mine at Nuttallburg, W. Va., is an automatic feeder to the crossover dump.

The New England Fuel & Transportation Co. is installing an automatic scale and dump feeder at the No. 3 mine, Lowesville.

#### CANADA

The Rocky Mountain branch of the Canadian Institute of Mining and Metallurgy is supporting Lewis Stockett of Calgary for president for the Institution year 1926-27. Mr. Stockett is a mining engineer of over forty years' active experience. He has been associated with the mining industry of Alberta and southeastern British Columbia for over thirty years and for the past twenty-one years has had the direction of the development and operation of some of the largest mining projects in Alberta and southeastern British Columbia.

British Columbia produced 2,438,052 gross tons of coal in 1925, compared with 1,964,469 tons in 1924. The output of Crow's Nest Pass increased from 273,170 tons in 1924 to 853,502 in 1925.

The Royal Commission appointed to inquire into the conditions leading to the recent strike of the miners employed by the Minto Coal Co. at Minto, N. B., held its first sittings at Fredericton on Feb. 10. In a statement of the miners' grievances they complained of long working hours and requested the adoption of legislation providing for an 8-hour day. A minimum wage scale also was requested.

#### Traffic

##### Illinois Intrastate Rates Cut

The Illinois Commerce Commission on Feb. 16 announced reductions in coal freight rates amounting to 11c. per ton to East St. Louis, Ill., from all Illinois points except from Group No. 2 mines, within a twenty-mile radius. On the latter mines the reduction is 21c. per ton.

The decisions were in the Perry Coal Co. and the Illinois Coal Traffic Bureau against the Alton & Southern R.R. et al. The new rates are to be established within forty-five days from Feb. 8, or on or before March 25. The interstate rates to St. Louis, Mo., will not be disturbed, thereby increasing the differential from 25c. to 33 to 46c. per ton.

The coal affected originates principally in the Nos. 2, 6 and 10 groups of mines.

The new rates, the reduction and the interstate rate to St. Louis, Mo., follow:

	New Rate	Reduction	St. Louis Rate
No. 2 (Belleville) within 20 miles	.70	21	\$1.16
No. 2 beyond 20-mile zone	.80	11	1.16
No. 5 (Nilwood-Taylorville)	.84	11	1.16
No. 6 (Duquoin)	.90	11	1.27
No. 7 (Centralia)	.90	11	1.27
No. 8 (Chatham)	.90	11	1.24
No. 9 (Murphysboro)	.96	11	1.35
No. 10 (Herrin-Zeigler)	.99	11	1.385
No. 15 (Springfield)	.93	11	1.26

#### Association Activities

The Fayette-Greene Coal Producers' Association will hold its third annual dinner meeting at the White Swan Hotel, Uniontown, Pa., Saturday evening, March 6, when U. S. Senator David A. Reed, of Pennsylvania, will be the principal speaker. Charles W. O'Neill, secretary-treasurer of the Central Pennsylvania Coal Producers' Association, also will speak. About 300 coal and coke producers of western Pennsylvania are expected to be present. G. Carl Areford is president of the Fayette-Greene Coal Producers' Association; J. Fred Shean is secretary, and T. J. McClellan, chairman of the meeting committee.

#### Obituary

John Robertson, Labor Member of the British Parliament for the Bothwell division of Lanarkshire since 1919, died at Glasgow, Scotland, Feb. 14. He went to work in a coal mine at the age of 13 and followed that calling for many years before he became one of the champions of labor in British politics. He was chairman of the Scottish Miners' Union and a strong advocate of nationalization of the mines.

Frank Nicther, 69, who for 20 years was mechanical engineer for the D. L. & W. Coal Co., now the Glen Alden, died Feb. 10 at Scranton, Pa., after a brief illness. During his long service with the Glen Alden he supervised the construction of many modern breakers, among them the Truesdale, the Taylor and the Diamond. He retired from the service of the coal company a few years ago to go into business for himself, and met with much success. He was born in Austria-Hungary, but had lived in Scranton 42 years.

M. C. Walker, 45 years old,—for many years superintendent of the Pittsburgh & West Virginia Coal Co.'s Echo Point mine, near Wheeling, W. Va.,—died suddenly at his home Sunday, Feb. 14. Heart trouble was given as the cause of his death. He is survived by seven brothers and four sisters. Mr. Walker came to Echo Point from Galley Valley, near Charleston, W. Va., several years ago.

## Coming Meetings

**Canadian Institute of Mining and Metallurgy.** Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

**New England Coal Dealers' Association.** Annual meeting at the State Armory, Worcester, Mass., April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

**The American Mining Congress.** Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

**International Geological Congress.** The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

**Western Canada Fuel Association.** Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

**American Wholesale Coal Association.** Annual meeting, June 7-9, at Toledo, Ohio. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

**Association of Iron & Steel Electrical Engineers.** Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

**American Society of Mechanical Engineers.** Spring convention at San Francisco, Calif., June 28-30. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

**Midwest Retail Coal Merchants Association.** Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

## New Companies

**The Colson Coal Co.** was incorporated early in February in Denver, Colo., with a capital stock of \$250,000, by H. W. Colson, Bessie Colson, George Stewart and others.

**The Coal & Clay Producers, Inc.** has been incorporated at Terre Haute, Ind., with a capital stock of 7,500 shares of no par value, to do a general coal and clay mining business. The incorporators are A. J. Beasley, L. M. Springer and H. Derby.

**The Gauley Fuel Co.**, which was incorporated late in January, with a capital stock of \$50,000, by S. M. Austin and John B. Laing, both of Lewisburg, W. Va., will operate in Nicholas County, Kentucky.

## Publications Received

**Superpower**, by William S. Murray. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Price, \$3. Pp. 237; 6 x 9 in.; illustrated. Some of the points discussed are the benefits to be expected from a national adoption of superpower, the economic aspects of the movement, its effects upon transportation.

**True Value of Reading Coal Stock and Effect of Coal Asset Upon Reading Stocks and Bonds.** Philadelphia Company of Philadelphia, Huguenot Park, New York City. Pp. 16, 6 x 9 in.

**Sampling and Examination of Mine Gases and Natural Gas**, by George A. Burrell and Frank M. Seibert; revised by G. W. Jones. A revision of Bulletin 42. Bulletin 197. Pp. 108; 6x9 in.; illustrated. Price 25c. Bureau of Mines, Washington, D. C.

**Organization and Courses of Study in Anthracite Coal Mining for Mine Foremen and Assistant Mine Foremen.** Department of Public Instruction, Harrisburg, Pa. Bulletin No. 6. Pp. 24; 6x9 in.

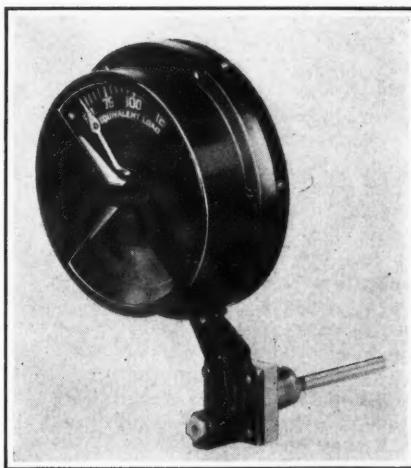
**Discovery Depletion in Relation to the Mining Industry.** General Tax Committee of the American Mining Congress, Washington, D. C. Pp. 76; 6x9 in.; illustrated. A discussion of the history, economic base and justification for the discovery depletion principle.

## New Equipment

### New Thermotel Registers Transformer Conditions

Accurate knowledge of the conditions under which electrical equipment is operating is always important. The type B-2 thermotel as manufactured by the General Electric Co., of Schenectady, N. Y., is a new load indicator for 60-cycle, 2,300-volt current. It is applicable to the subway type distribution transformers ranging in size from 15 to 200 kva, inclusive. It is similar to the thermotel for the pole type of transformers and was designed as a convenient and reliable means of making load surveys.

This instrument is designed to evaluate the sum of all of the several



### The Transformer Watchman

This little instrument which may be attached to the side of the transformer shows the percentage of capacity which the unit is carrying and also indicates when the full capacity is exceeded. This latter indication constitutes virtually a danger signal.

variables on which the output of a transformer depends. These include the kva. rating of the transformer, the load, the duration of the load, and the temperature of the surrounding air, usually referred to as the ambient temperature. The percentage of available transformer capacity being utilized is also indicated.

This instrument shows when the transformer is underloaded as well as overloaded, together with the load conditions existing at the time of resetting. Furthermore, it exposes an easily distinguishable danger signal when safe load conditions are exceeded. An important detail of its construction is its ability to accurately differentiate ambient temperature variations.

This device consists essentially of two thermometers connected in series. One is of the capillary tube type and is immersed in the oil of the transformer; the other is of the bimetallic type and is located in the external case and acts as a corrective for the ambient temperature. The combination of the two actuates an index and danger signal.

The external case is of brass, finished in black japan and thermally insulated from the radiant heat of the transformer by a metal screen and air space. This case is riveted to a bronze casting through which the capillary tube passes. Installation requires only the removal of the lower oil-sampling plug, after which the thermotel, which is provided with the necessary fitting, is screwed into place. An auxiliary sampling plug is provided on the instrument to permit the checking of the oil level in the transformer.

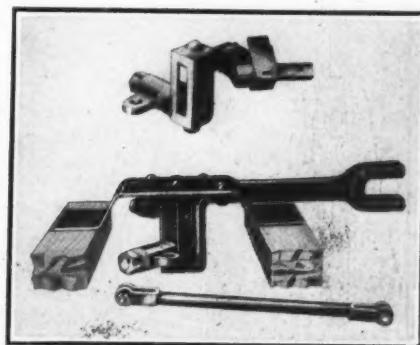
The index is of the maximum reading type and records the maximum percentage of the transformer's capacity that has been utilized since the last resetting, the scale being graduated to read between 50 and 100 per cent of transformer capacity. The semaphore indicating an overloaded transformer is normally not visible until 100 per cent of the capacity has been exceeded. When this occurs, it drops into view.

### Low Parallel-Throw Switch Stand Is Adjustable

An inexpensive, double-bearing, parallel-throw switch stand called the "Durabil" that is claimed to be positive in action and smooth in operation recently has been developed and patented by the L. A. Green Railway Equipment Co., of Pittsburgh, Pa. The accompanying illustration shows this switch throw in some detail.

All parts of this switch stand are below the housing and thus are protected from damage. The entire stand is compact, rising only 2 in. above the ties. The throw of the lever is parallel to the track assuring safety to the operator. The stand is non-automatic and self locking, being on dead center when in normal position.

All parts of this device are made of rolled or die forged steel. The length of throw is adjustable, being capable of variation from 3 to 5 in. by the mere transference of shims or washers. Thus this stand can not only be used



### Details of the Switch Stand

It is built entirely of forgings no cast parts being employed. It is low and compact and the movement of the hand lever is in a direction parallel to the track assuring safety. Actual length of throw may be adjusted to suit local requirements.

with switches of differing lengths of throw but by changing the position of a shim or two it can be adjusted for worn switch points thereby obtaining positive contact of these parts. The connecting rod may be either made rigid or be fitted with a spring.

### Saves Time in Splicing

Trolley lines have a way of failing at inopportune moments. In the accompanying illustration is shown the type SL bronze, set-screw splicer as recently developed by the Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa. This splicer permits repairs to the trolley wire to be made in a minimum of time, thus saving both direct and in-



Firm Grip is Assured

In this 10-in. splicer which accommodates all sizes and cross sections of trolley wire, the four set screws hold the two ends of the wire firmly. The greater the tension on the wires, the tighter will the set screws bind.

direct losses, the latter frequently far overshadowing the first in magnitude. The approach lips point upward forming a firm yet gentle underrun. The wires may be inserted without bending and each is held firmly in place by two set screws.

These set screws are inserted in a slanting direction and are mounted in square nuts that are capable of rocking. Each nut thus acts like the fulcrum of a pinch bar to which the set screw forms the active end. As soon as tension is applied the set screws wedge tight and take hold of the wire so that it cannot slip. This splicer is 10 in. long and one size will accommodate all trolley wires from 1/0 to 4/0 round, grooved or of figure-8 section.

### New Cable-Reel Locomotive Is But 25 In. High

In the accompanying illustration is shown the low, cable-reel locomotive recently placed on the market by the Jeffrey Manufacturing Co., of Columbus, Ohio. This machine is built with either inside or outside drivers. The overall height of the inside wheel type

is 26 in. with a trolley pole mounted on an outrigger. The overall height of the outside wheel type is 25 in.

This low type of locomotive permits the trolley pole to be placed on top of the machine, yet keeps the minimum height of the trolley wire down to 29 1/2 in. The motor equipment consists of two low speed motors giving a maximum traversing speed of 4 m.p.h. at full load. The machine may also be built for a speed of 6 m.p.h.

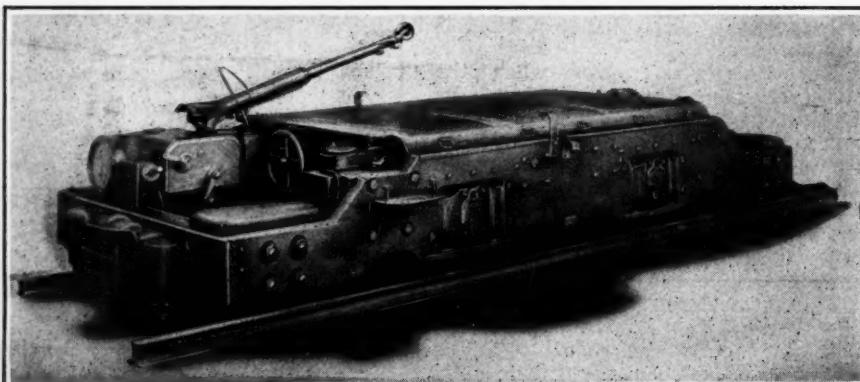
The cable reel diameters for the inside-wheel type of locomotive range from 42 to 48 in. They are fitted with 850 ft. of No. 3, single-conductor cable. This reel is motor driven. The motor equipment on this locomotive was designed especially for it, and is much more liberal in dimensions than has formerly been the case on similar machines. The frame is of the plate type 2 1/2 in. thick, and the controller is of the non-stubbing finger variety, on contact cylinder as well as on the reverse. All fingers have renewable burning tips.

### Trap Prevents Wire Drawing

When a steam trap is open it should be wide open, and when it is closed there should be no leakage. Furthermore, any device of this kind should be simple in construction and readily accessible.

In the accompanying illustration is shown a steam trap that is said to embody these three important requisites. It has but few working parts and in operation is either shut tight or wide open. It was designed by a practical steam engineer to overcome the troubles he had experienced in his own plant. It is now being manufactured by the Williams Gauge Co., of Pittsburgh, Pa., and is known as the "Williams new ball-seat trap No. 4B."

This trap is held closed and tight when the float is in the position shown in the accompanying illustration. This float is made of welded chrome nickel, and is tested to a pressure of 600 to 1,200 lb. As the water in the chamber rises the float, of course, rises with it, but the trap does not open immediately. The ball cage is purposely made sufficiently large so that there is approximately 1/8 in. of lost motion or play between the ball valve and the cage. Consequently, the ball is held in place by the pressure within the trap until

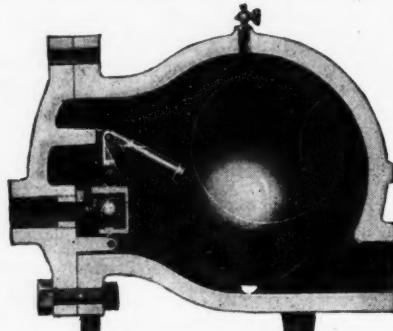


Low Cable Reel Locomotive

The total height of this machine ranges from 25 to 26 in. depending upon whether the drivers are outside or inside the frame. The height of the trolley wire may be as little as 29 1/2 in. The motor-driven reel will hold 850 ft. of cable, permitting the locomotive to proceed this distance beyond the end of the trolley line.

the float rises to the position shown by the dotted line. When this position is reached the cage pulls the ball away from its seat, and the trap is wide open.

As soon as the ball leaves its seat the pressure is equalized and the ball moves to the back of the cage, leaving the outlet fully open so that discharge is quickly accomplished. No wire drawing



Part Section of Trap

This device is intended to overcome the usual failings of steam traps, chief of which is a liability to steam cutting. When this trap opens it opens wide; when it closes it closes tight. There is thus small danger of its developing a leak.

across the seat can occur. As the water is blown out, the float sinks, and when the water level reaches a point 3 or 4 in. above the outlet the float has assumed the position shown in the picture. This tips the cage forward to a point where the ball is caught by the water being discharged and the valve closes with a snap. Once closed there is no possibility of leakage. Inasmuch as the ball and seat fit each other accurately, and both are made of Monel metal, tightness is assured. Both the ball and the seat are removable and may be easily renewed. Every part is quickly accessible and although there is but slight possibility that repairs need be made, the time and cost of making them should they ever be necessary will be only trifling.

### Industrial Note

A merger of the financial interests of the Hewitt Rubber Co., of Buffalo, N. Y., with the Gutta Percha & Rubber Mfg. Co., of New York and Brooklyn, recently was effected. At a reorganization meeting held in Buffalo, F. E. Miller was elected president of the Gutta Percha & Rubber Mfg. Co.; John H. Kelly and Amadee Spadone were elected vice-presidents, and W. J. Magee, secretary and treasurer. The reorganization is the first step in the removal of the company's plant, office and other facilities to Buffalo.

### Trade Literature

W. C. Lipe, Inc., Syracuse, N. Y., has issued an 18-pp. 8 1/2x10 1/2-in. bulletin illustrating and describing its products, among which are its speed reducer, electric hoists, flexible couplings, internal geared conveyor pulley, gear tooth rounding machine and coil winder.

**Measurement of Water.** Republic Flow Meters Co., Chicago, Ill. Bulletin No. W-31. Pp. 15; 8 1/2x11 in.; illustrated. Describes the metering of water electrically.

**Standard Chain Drives.** Hans Renold, Ltd., Didsbury, England. Pp. 47; 4x6 in.; illustrated. Describes both the Bush roller and inverted tooth type chain drives up to 50 hp. Prices are included.

**Metallo Gaskets.** Metallo Gasket Co., New Brunswick, N. J. Catalog 26. Pp. 32; 6x9 in.; illustrated. Describes the styles of gaskets manufactured by this company and gives price lists.